

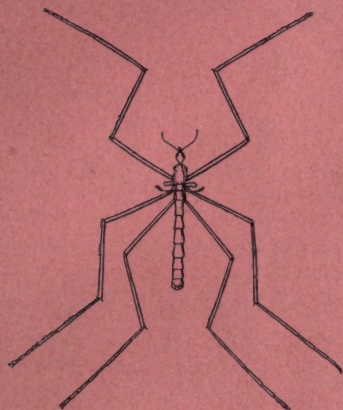
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ENTOMOLOGICAL NEWS

Vol. XVII.

No. 1.



Limnophila aspidoptera Coquillett.

EDITOR :

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PHILADELPHIA:

ENTOMOLOGICAL ROOMS OF

THE ACADEMY OF NATURAL SCIENCES,

LOGAN SQUARE.

Entered at the Philadelphia Post-Office as Second-Class Matter.

ENTOMOLOGICAL NEWS

Published monthly, **excepting July and August**, in charge of the Entomological Section of the Academy of Natural Sciences, Philadelphia, and the American Entomological Society.

ANNUAL SUBSCRIPTION, \$1.00 IN ADVANCE.

Outside of the United States and Canada, \$1.20.

Advertising Rates: 30 cents per square inch, single insertion; a liberal discount on longer insertions. No advertisement taken for less than 60 cents—Cash in advance.

 All remittances should be addressed to ENTOMOLOGICAL NEWS, Academy of Natural Sciences, 19th and Race Streets, Philadelphia, Pa.

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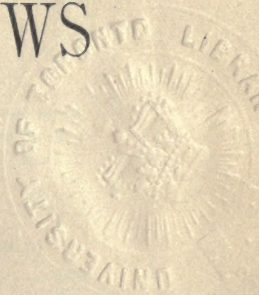
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Biological & Medical Serials

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PROCEEDINGS

OF THE

ENTOMOLOGICAL SECTION

OF THE

Academy of Natural Sciences
of Philadelphia.

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THE ACADEMY OF NATURAL SCIENCES,

LOGAN SQUARE.

1906.

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P. C. STOCKHAUSEN

PRINTER

53-55 N. 7TH ST., PHILADELPHIA.

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INDEX TO VOL. XVII.

(Notes and articles on geographical distribution are indexed under the names of the States or countries concerned, and **NOT** under the species listed therein, except in the case of new or redescribed species. New generic and specific names are marked with a *.)

GENERAL SUBJECTS.

- | | |
|--|--|
| Academy of Natural Sciences of Phila., Entom. Section of, 102, 182, 183. | Entomological Society of America, 352, 354. |
| Alpine region of Mt. Washington, Insects of..... 323 | Explanation of Terms used in Entomology, Smith's 309 |
| American Entomol. Society, 101, 103, 184, 185, 229. | Feldman Collecting Social, 37, 70, 102, 185, 186, 265, 311, 403. |
| American Mosquito Extermination Society, 15, 69. | Field mice destroying insects. 102 |
| Announcement of changes in the News 398 | Floor maggot, Congo..... 64 |
| Antedating publications, 181, 224, 264. | Folsom's Entomology 262 |
| Association of Economic Entomologists, 100, 399. | Formaldehyde as an insecticide 130 |
| Berlese's apparatus for collecting small Arthropods, 49, 182. | Faunal relations of west coast of North America 227 |
| Berlese's Gli Insetti..... 402 | Geographical races 43 |
| Blind beetles, 76, 105. | Griffon vulture, Biting louse from 62 |
| British Columbia Entom. Society 221 | Hasty publication, 32, 181, 224, 264. |
| Brooklyn Entom. Society, 36, 141, 267. | Hawaiian Entom. Society.... 225 |
| California Academy of Science, Ruins of..... 187 | Hybrid larvæ of moths..... 396 |
| Chiggers, Remedy for 399 | Insect galls 34 |
| Cotton Belt, Association of Official Entomologists of... 347 | Kansas University Collection 348 |
| Earthquake and fire in California, 222, 261. | Letters to Editors, 15, 32, 69. |
| Economic Entomology, Value of 140 | Male moth largely colored like female 141 |
| Editorials, 29, 68, 100, 140, 180, 221, 261, 308, 346, 398. | Malpighian tube within the heart, 113, 179. |
| Emergency case in insect architecture 139 | Medical entomology 180 |
| Entomological literature, 262, 263, 309, 400. | Method of preparing wings for study, new 218 |
| | Mexico, Collecting in, 26, 399. |
| | Mimicry 103 |
| | Mosquito extermination 36 |
| | Newark Entom. Society..... 35 |
| | Newspaper entomology, 35, 311, 397. |
| | Number of eggs of insects.... 368 |

Obituary:

Hayward, R..... 230

Osten Sacken, C. R...
269, 273Ohio University Lake Labora-
tory 122Pacific Coast Entom. Society,
104, 105, 226.Pennsylvania Board of Agric.,
Entomologists to 311Pennsylvania Insects, Data
wanted on 230Pennsylvania Mountains, Col-
lecting in, 263, 312.

Personals:

Bethune, C. J. S..... 220

Calvert, P. P..... 309, 399

Coquillett, D. W... 224, 264

Cotton, E. C..... 309

Dyar, H. G.....
115, 224, 264, 309

McCook, H. C..... 225

Mueschen, K..... 309

Poling, O. C..... 309

Rehn, J. A. G..... 322

Skinner, H..... 307

Slosson, Mrs. A. T.... 181

Smith, J. B..... 309

Snow, F. H..... 309

Van Duzee, E. P..... 112

Viereck, H. L..... 150

Willing, T. N..... 399

Plants:

Asclepias, Pollen of
borne by butterflies.. 268

Chestnut worms..... 311

Corn, Insect injury to
311, 361Date palms, *Strategus*
injuring 34Gooseberries, Aphid at-
tacking 59Grain injured by chinch
bug 361

Grain louse 327

Grape-foliage, Beetle in-

juring 212

Huckleberries injured
by *Rhagoletis* 37

Locust borers..... 404

Maples, Insect injury
to 313, 317

Oats, Aphid on..... 290

Peach-foliage, Weevil
injuring 210Rosin-tubes, Insect
from 403Scarlet sage defoliated
by *Aleurodes*..... 403*Scleroderma*, Beetle lar-
væ in 115

Popular ignorance of insects. 346

Preservation of related spe-
cies, A factor in..... 146

Progression, Ways of..... 1

Pronunciation of entomologi-
cal names 367

Protective coloring 403

Rock-boring mite 193

San Francisco entomological
collections, etc., destroyed
by fire 222, 261

Say, Remains of Thomas... 248

Stanford University, Injury to 222

Temperature effects on mos-
quitoes, Low..... 216Trypanosomiasis, Fly dissem-
inating 294Types, To lessen chances of
destruction of 261

Venation 117

Winter insects of Texas.... 154

ARACHNIDA.

Leptus irritans 399

New Hampshire, A. of..... 326

New York, A. of..... 194

Ohio, A. of..... 399

Rock-boring mite..... 193

*Scutovertex petrophagus**.... 194

Washington, A. of..... 350

COLEOPTERA.

<i>Aglyptinus</i> *	240
<i>Agrilus lucanus</i> *	167
<i>Allopogonia</i> *	241
<i>Araeopidius</i> *	241
Arizona, C. of....	34, 141, 186, 309
<i>Blapstinus</i> spp.	104
<i>Bradycinetulus</i> *	242
British Columbia, C. of....	164
<i>Caeniella</i> *	242
<i>Caenocara oculata</i>	114
California, C. of....	71, 104, 105, 106, 162, 164, 226, 228, 393, 394.
<i>Cantharis pilsbryi</i> *	217
<i>Cicindela</i> , Habits of....	338
“ <i>tranquebarica</i>	43
<i>Cnemodinus</i> *	242
<i>Corthylus punctatissimus</i>	37
<i>Dasytes shastensis</i> *	75
“ <i>vicinus</i> *	74
Delaware, C. of....	115
<i>Diabrotica</i> , 12-punctata....	213
<i>Ephelinus</i> *	241
<i>Epicaerus imbricatus</i>	212
<i>Eschatoporis</i> *	76
“ <i>nunnenmacheri</i> *	78
<i>Eudesmula</i> *	241
<i>Eupsophulus</i> *	242
<i>Eurypodea fredericki</i>	400
<i>Eustromula</i> *	242
<i>Fidia cana</i>	212
Geographical races of <i>Cicindela</i>	43
Georgia, C. of....	38, 165, 186
<i>Gyrinus parvus</i>	228
<i>Helopeltina</i> *	240, 349
<i>Hematinum</i> *	243
<i>Hippodamia americana</i> and <i>sinuata</i>	104
<i>Lathrotropis caseyi</i> *	71
<i>Leptura</i> , Distribution of....	227
Louisiana, C. of.....	165
Lower California, C. of....	167, 168
<i>Mastogenius impressipennis</i> *	167

Myrmecophilous C.....	26
New Hampshire, C. of.....	324
New Jersey, C. of.....	38, 267
New Mexico, C. of.....	163, 329
North Carolina, C. of....	85, 186
<i>Omileus epicaeroides</i>	210
<i>Omus</i> spp.	104, 185
<i>Pachyscelus purpureus</i>	404
<i>Parahornia</i> *	349
<i>Pelatinus</i> *	240
Pennsylvania, C. of..	186, 266, 403, 404.
<i>Phoenicobiella</i> *	243
<i>Platycerus opacus</i> *	393
<i>Pleocomma hoppingi</i> *	394
<i>Polycesta</i>	166
Preoccupied generic names in C.	240, 310, 349, 397
Quebec, C. of	101
<i>Rhypodillus</i> *	243
<i>Strategus julianus</i>	34
Tenebrionid, Blind	76
Texas, C. of..	10, 155, 210, 212, 217, 361.
<i>Trachykele nimbosa</i> *	164
“ <i>opulenta</i> *	162
“ spp.	160
<i>Triglyphulus</i> *	243
Venezuela, C. of.....	400
Washington, C. of.....	106, 163
Wingless beetles	210, 212
<i>Wollastoniella</i> *	243

DIPTERA.

<i>Anopheles</i>	280, 380
<i>Aucheromyia luteola</i>	64
Biting Leptid at high altitude	183
California, D. of....	107, 109, 127, 226, 371, 375.
<i>Calotarsa</i>	123, 226
“ <i>insignis</i> *	126
<i>Chersodromia (Stilpon) houghii</i>	370
<i>Chrysops</i>	37, 39, 101, 312, 404
Collecting and mounting D...	226

- Columbia, D. of District of... 244
 Congo floor maggot..... 64
*Corethrella appendiculata**... 343
*Culex lativittatus** 109
 " spp. .4, 36, 107, 109, 214, 279,
 282, 369, 380.
*Cuterebra cyanella** 391
 " spp. 392
 Egg-laying of *Culex*...4, 214, 215,
 282, 369.
 Empididae, Genera of..... 370
 Eye-maculation of *Chrysops*. 39
Glossina 300
 " *palpalis wellmani*... 294
 Illinois, D. of 48, 369
 Jamaica, D. of 343
Janthinosoma musica 350
Limnophila aspidoptera 29
 Minnesota, Washburn's D. of
 400, 293
 Mississippi mosquitoes 69
 Mosquito survey of Pennsylv-
 vania 150
Mydas fulvifrons and *chrysos-*
 toma 347, 404
 Nebraska, D. of..... 391
 New Hampshire, D. of...37, 325
 New Jersey, D. of...36, 37, 101,
 266, 312, 347, 404.
 New Mexico, D. of.....29, 373
 North Carolina, D. of..82, 83, 85
*Parathalassius aldrichi** 374
 " *candidatus**... 375
Pelastoneurus nigrescens.... 69
 Pennsylvania, D. of..186, 214, 279,
 350, 380, 404.
*Prorates** 372
 " *claripennis** 373
 Reduction of wings..... 371
Rhabdophaga rigidae 398
Rhagas mabelae 378
Rhinoessa albula 403
 Song of mosquitoes..... 380
 Staten Island, D. of..... 36
Sym' allophthalmus 372
*Tabanus subniger** 48
Tanypus dyari 244
 Temperature, Effects of low
 on mosquitoes 216
*Thinodromia** 370
 " *inchoata** 370
*Toreus** 376
 Tse-tse fly 294
 Washington, D. of..... 375
 West Africa, D. of..... 294
- ### HEMIPTERA.
- Aleyrodes* 127, 493
*Alydus setosus** 386
Anasa tristis 383
*Aphis houghtonensis** 59
 Aquatic H. 54
Arilus cristatus 6
 Arizona, H. of..384, 385, 387, 391
Blissus leucopterus 361
 British Columbia, H. of...388, 389
 California, H. of.....385, 387
 Chinch bug 361
*Cicada fulvula** 322
 " spp. 237, 321
 Colorado, H. of..... 34
 Columbia, H. of District of.. 322
 Connecticut, H. of..... 127
 Costa Rica, H. of..... 54
Diaspis pentagona, Parasites
 of 291
*Eremocoris obscurus** 388
 Feeding, Method of in H.... 382
 Florida, H. of..... 322
 Georgia, H. of..... 382
 Germany, Aphid from..... 290
 Illinois, H. of..... 368
 Indiana, H. of.....59, 322
*Jalysus wickhami** 387
 Japan, H. of.....205, 335
 Java, H. of..... 207
Leptoglossus phyllopus 382
Macrosiphum granaria...290, 327
 Maryland, H. of..... 6
 Montana, H. of..... 387

- Narnia snowi** 384
 " spp. 384, 385, 386
 " *wilsoni** 385
 New Hampshire, H. of..... 326
 New Jersey, H. of..... 239
 New York, H. of..... 239, 390
*Nipponaphis** 205
 " *distychii** 205
 Ohio, H. of 322
*Pemphigus oestlundii**..... 34
*Peritrechus tristis** 388
Pulvinaria innumerabilis..... 368
 Quebec, H. of 239
*Reduvius (Opsicoetus) senilis** 390
 Tenacity of *Acanthia lectularia* 350
 Texas, H. of.... 155, 290, 327, 361
*Togo** 335
 " *victor** 336
*Trichosiphum** 206
 " *anonae** 207
 " *kuwanai** 209
 Utah, H. of..... 387
 Water-bugs, Progression in.. 1
*Xerocoris** 385
*Xestocoris** 389
 " *nitens** 390
- HYMENOPTERA.**
- Ablerus clisiocampeae*..... 292
*Ancistromma bruneri** 248
 " *sericifrons**.... 247
*Anoplius humilis** 304
 Ant, New fossil 27
 Ants, Tropical, in U. S.... 23, 265
*Anusia xerophila** 61
 Architecture of *Vespa* in emergency 139, 267
 Argentina, H. of..... 58
Bombus nests 183
Caupolicana 57
 " *albicollis** 57
Cerceris deserta 397
 China, H. of..... 121
- Colletes birkmanni** 259
 " *crawfordi** 257
 " *hesperius** 257
 " *lacustris** 258
 " *pleuralis** 259
 Colorado, H. of..... 28, 220
 Columbia, H. of District of 292, 307
*Comperiella** 121
 " *bifasciata** 122
 Connecticut, H. of... 302, 313, 397
 Delaware, H. of..... 307
 Digger bees, Nests of... 229, 266
*Eulophus guttiventris**..... 305
*Halictus swenki** 275
 Hive bees in city 142
 Illinois, H. of.... 7, 151, 249, 292
 Kansas, H. of..... 94
*Metopius harbecki** 150
 Michigan, H. of..... 259
 Missouri, H. of..... 292
 Montana, H. of..... 259
 Nebraska, H. of..... 246, 275
 New Hampshire, H. of..... 323
 New Jersey, H. of..... 182
*Odontophyes ferruginea**.... 94
*Odynerus (Ancistrocerus) waldenii** 304, 350
 Parasitic H.... 7, 61, 94, 121, 150, 151, 249, 291, 305, 320.
 Pennsylvania, H. of..... 150
Perisopterus pulchellus..... 292
 Peru, H. of..... 58
*Ponera hendersoni** 28
Priophorus acericaulis..... 313
*Prospalta berlesesi** 292
 " *murtfeldtii* 292
*Pteronotus arapahomum**..... 220
 Rhode Island, H. of..... 292
*Tachysphex punctulatus**.... 246
 Texas, H. of.... 61, 155, 257, 260
*Tiphia brunneicornis** 303
 " *egregia** 303, 350
 " *relativa** 304
 " *waldenii** 302, 350
Vespa spp. 182
 Washington, H. of..... 257

LEPIDOPTERA.

- Alaska, L. of..... 379
Apantesis oithona 37
Apatela funeralis 69
Argynnis idalia 35, 141
 Arizona, L. of. 95, 96, 98, 99, 101,
 188, 289, 349, 379.
Attacus cecropia 368, 395
 " *promethea* 396
 Behr's types of L. 261
 California, L. of. 98, 105, 106, 183,
 188, 226, 347, 349.
 Canada, L. of..... 379
*Carystus richardi** 201
 Catocalæ in daylight..... 231
Catopsilia philea 104
Cerostoma 96
 " spp. nn* 97, 98
*Charis suapure** 199
 Cocoons of hybrid larvæ. 395, 396
 " " *Telea polyphemus*
 33, 112, 177, 225
 Colorado, L. of..... 204
 Connecticut, L. of..... 70
*Cosmosoma rubrigutta** 96
Cymolomia 305
Dryocampa rubicunda 396
 Early and late L. 70, 103
Eccopsis 305
*Ecclesia klagesii** 195
Erannis tiliaria 37
Eubaphe ostenta 101
Euclea dolliana 392
*Eupithecia helena** 191
Euproctis chrysorrhoea, Over-
 wintering European nests
 of 101
*Euselasia tysoni** 199
Evetria comstockiana 403
Exartema 305
 Georgia, L. of..... 104
Harrisimemna trisignata.... 21
Heliconius charitonius..... 34
Hemileuca budleyi 395
 Hesperidae, Dyar's review of
 110, 142, 309
*Hydriomena magnificata**.... 189
 " *multipunctata**.. 188
Hyperchiria io..... 141
 Illinois, L. of..... 368
*Ithomia hamlini** 196
 Kansas, L. of..... 34
Lemonias larvæ 140
 Long Island, L. of..... 37
*Loxoterma** 305
*Macaria quadrifasciata** 190
*Melamaca virgata**..... 188, 349
Melamaea " 349
Melitaea chalcon 105
*Methonella carveri** 200
 Missouri, L. of..... 231
*Monoleuca spadicea** 289, 392
 Montana, Elrod's L. of. 229, 263
 New Hampshire, L. of..... 323
 New York, L. of, ... 21, 37, 69
 North Carolina, L. of..... 84
*Nymphidium quinoni** 201
 Ohio, L. of..... 31, 70
Ophisma tropicalis 213
*Pamphila bobae** 203
 " *brooksii** 204
 " spp. 70, 150, 185
 Papilios, Rothschild and Jor-
 dan's Revision of the Amer-
 ican 400
*Papilio rutulus arcticus**.... 379
 Pennsylvania, L. of.... 37, 70, 99,
 103, 213, 229, 404.
Phyllocnistis vitigenella 70
 Pollen borne by L. 208
Pyrgus centaureae..... 99, 289
 " *occidentalis** 96
 " spp. 277
Pseudorthosia variabilis var.
*pallidior** 204
*Pythonides hoyti** 202
*Rhescipha snowi** 95
*Ruscino arida** 95

INDEX.

vii

<i>Samia cecropia</i>	368
“ <i>cynthia</i>	396
Secretion of <i>Pamphila meta-</i> <i>comet</i>	150
<i>Syntomeida befana</i> *	379
<i>Tachyris ilaire</i>	310
<i>Telea polyphemus</i> cocoons. 33, 112, 177, 225.	
Texas, L. of.....	34, 95, 96
<i>Thecla calanus</i> and <i>edwardsii</i> . 283	
“ <i>carteri</i> *	197
“ <i>hosmeri</i> *	198
“ <i>madic</i> *	197
<i>Tischeria malifoliella</i>	307
<i>Vanessa j-album</i>	310
Venezuela, L. of.....	195-204
West Virginia, L. of.....	310

NEUROPTERA.

<i>Alloperla</i> *	175
Arizona, N. of.....	337
<i>Basiaeschna janata</i>	104
Bird louse, Gigantic	62
<i>Brachynemurus currici</i> *	93
<i>Chloroperla</i>	174
Colorado, Odonata of.....	351
Copulation of Odonata... 143, 148	
<i>Cryptotermes</i> *	336
“ <i>cavifrons</i> *	337
<i>Erythemis</i>	30
<i>Erythrodiplax berenice</i> and <i>naeva</i>	99
Florida, N. of.....	337
<i>Gomphus brevis</i>	104
Guatemala, Odonata of.....	182
Iowa, Odonata of.....	357
<i>Isoperla</i> *	175
<i>Laemobothrium gypsis</i> *	63
<i>Libellula luctuosa</i>	30
<i>Mesothemis</i>	30
Mexican and Central Ameri- can Odonata wanted.....	347
<i>Nephepeltia phryne</i>	182
New England, Odonata of....	31
Newfoundland, Odonata of... 133	

New Hampshire, N. of.....	326
New Jersey, Odonata of.....	104
New Mexico, Odonata of....	351
Nomenclature of N. Amer. Odonata	30
North Carolina, Odonata of..	81, 91.
<i>Plathemis subornata</i>	351
<i>Somatochlora</i> spp.....	136
<i>Termopsis laticeps</i> *	337
Texas, N. of.....	93, 169
Venation of N.....	116

ORTHOPTERA.

<i>Ageneotettix</i>	253
“ <i>arenosus</i> *	255
<i>Amphibotettix</i> *	86
“ <i>longipes</i> *	87
Anomalous position of Mal- pighian tube	113, 179
Arizona, O. of.....	229
<i>Autolyca doylei</i> *	192
Borneo, O. of.....	88
Brazil, O. of.....	332
Colombia, O. of.....	193
<i>Conocephalus lyristes</i> and <i>ne-</i> <i>brascensis</i>	366
Costa Rica, O. of.....	204
<i>Dictyophorus reticulatus</i>	229
<i>Eotettix hebardii</i> *	235
Georgia, O. of.....	234
Illinois, O. of.....	253
Length of life of O.....	229
<i>Lichenochrus decidus</i> *	204
“ <i>marmoratus</i>	204
Maryland, O. of.....	366
<i>Melanophus scudderii texensis</i> * 158	
<i>Mesochlora unicolor</i> *	157
Myrmecophilous O.....	26
<i>Nemobius funeralis</i> *	159
New Jersey, O. of.....	366
North Carolina, O. of.....	85
Pennsylvania, O. of.....	102
Peru, O. of.....	89, 90, 91
<i>Platybothrus alticola</i> *	284

<i>Platyttetix</i> *	88	Grabham, M.	343
<i>reticulatus</i> *	88	Grossbeck, J. A.	289, 392
<i>Stagmomantis</i> spp.	229	Haimbach, F.	38, 70, 102, 186, 266, 267, 403, 404.
<i>Stenodorsus</i> *	90	Hancock, J. L.	86, 253
<i>extenuatus</i> *	91	Hart, C. A.	154
<i>Taxiarchus paraensis</i> *	332	Herrick, G. W.	69
<i>Tenodera sinensis</i>	102, 311, 403	Holland, W. J.	34
Texas, O. of	156	Houghton, C. O.	114
<i>Trigonofemora</i> *	89	Howard, L. O.	49, 101, 121, 291, 402
<i>fossulatus</i> *	89	Johnson, C. W.	273
Utah, O. of	284	Johnson, S. A.	139

AUTHORS.

Aldrich, J. M.	123, 269	Joutel, L. H.	237
Banks, N.	174, 193, 336	Kellogg, V. T.	62, 222
Bergroth, E.	335, 350	Knaus, W.	329
Blaisdell, F. E.	71, 106, 107, 228	Kuschel, R.	112
Bridwell, J. C.	94	Kunze, R. E.	177
Brimley, C. S.	81, 91	McClendon, J. F.	26, 93, 117, 169
Britton, W. E.	127, 313	Melander, A. L.	370
Brooks, F. E.	310	Mitchell, E. G.	244
Brues, C. T.	61	Miller, N.	357
Buchholz, O.	36	Moore, R. M.	338
Bueno, J. R. de la T.	I, 54	Nason, W. A.	7, 151, 249
Busck, A.	305	Newcomer, E. J.	348
Calvert, P. P.	31, 99, 148, 179, 263, 347 and Index.	Osborn, H.	321
Caudell, A. N.	192	Pearsall, R. F.	21
Chagnon, G.	101	Pearson, A. W.	70
Champion, G. C.	182	Pergande, T.	205
Cockerell, T. D. A.	27, 34, 204, 220, 240, 349, 397, 398.	Pilate, G. R.	31
Cook, J. H.	99	Quayle, H. J.	4
Coolidge, C. R.	140, 263	Rehn, J. A. G.	183, 204, 284, 332, 366.
Coquillett, D. W.	48, 109, 224	Riley, W. A.	113
Crawford, J. C.	275	Rowley, R. R.	175, 231
Daecke, E.	39, 347	Sanborn, C. E.	290
Davis, J. J.	368	Sanderson, E. D.	210, 327, 361
Davis, W. T.	237	Sherman, F., Jr.	32
Dury, C.	350, 399	Skinner, H.	29, 33, 68, 95, 100, 101, 102, 103, 104, 110, 140, 142, 150, 180, 181, 182, 184, 185, 186, 213, 221, 229, 261, 277, 278, 283, 346, 350, 379, 398, 401.
Dyar, H. G.	32, 69, 264	Slingerland, M. V.	130
Fall, H. C.	160, 393	Slosson, A. T.	323
Fenyés, A.	310		
Forbes, W. T. M.	225		
Girault, A. A.	6, 305, 382		

INDEX.

ix

Smith, H. S.....	57, 246	Van Dyke, E. C.....	224
Smith, J. B.....	69	Viereck, H. L.....	302, 397
Soule, C. G.....	33, 395	Weber, S. E.....	214, 279, 380
Summers, H. E.....	100	Weeks, A. C.....	37, 142
Surface, H. A.....	230	Weeks, A. G.....	195
Swenk, M. H.....	257	Weeks, H. C.....	21
Swett, L. W.....	349	Wellman, F. C.....	64, 294
Taylor, G. W.....	188	Wheeler, W. M.....	23, 69, 265
Tower, W. V.....	218	Wickham, H. F.....	43
Troop, J.....	59	Williamson, E. B.,	133, 143, 150,
Tucker, E. S.....	10	213, 248, 351.	
Van Duzee, E. P.....	384	Wright, W. G.....	187, 225

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

JANUARY, 1906.

No. 1.

CONTENTS:

De la Torre Bueno—Ways of Progression in Waterbugs.....	1	Weeks—Letter to the Editors.....	15
Quayle—Notes on the Egg-laying habits of <i>Culex curriei</i> Coq.....	4	Pearsall— <i>Harrisimemna trisignata</i> Walk.....	21
Girault—Standards of the number of eggs laid by insects—IV.....	6	Wheeler—On certain tropical ants introduced into the United States.....	23
Nason—Parasitic Hymenoptera of Algonquin, Illinois—III.....	7	McClendon—Notes on collecting in Mexico.....	26
Tucker—Determinations of some Texas Coleoptera with Records.....	10	Cockerell—A new fossil ant.....	27
		Editorial.....	29
		Notes and News.....	30
		Doings of Societies.....	35

Ways of Progression in Waterbugs.

By J. R. DE LA TORRE BUENO.

IN ENTOMOLOGICAL NEWS for December, 1904 (p. 344), Mr. G. W. Kirkaldy has a suggestive note on the subject of oaring in waterbugs, in which he refers to Professor Packard's remarks in "Half Hours with Insects," on the motion of the legs in swimming in *Ranatra* and *Belostoma* and (*Amorgius*). In February, 1905 (p. 53), the NEWS published a brief note of mine on *Corixa*, *Notonecta* and *Belostoma*, and in March (p. 88), Mr. C. S. Brimley, of Raleigh, threw further light on the method in *Benacus griseus*. These brief notes suggested to me that since I would have living waterbugs in my aquaria through the spring and summer, it might be well to look into the subject a little more thoroughly, the more so that all the general works I have been able to consult content themselves with vague remarks. In connection with my breeding experiments, the following observations were made:

The position back down assumed in swimming by our American genera of the family *Notonectidae* is too well known to call for more extended mention. In *Notonecta* (*irrorata*, *undulata*, *variabilis* and *insulata*) and in *Buenoa* (*Anisops*, par-

tim), the third pair of pedes only are natatorial and the tibiæ and tarsi are heavily fringed with long hairs. The legs are moved simultaneously and quite rapidly in powerful backward strokes, the fringing ciliæ expanding on the propulsive and closing on the return stroke. *Plea* agrees with the larger Notonectids in the position and method, but the stroke is quicker and more clipping and the tibiæ and tarsi are very sparingly provided with short hairs. On land, both *Notonecta* and *Buenoa* move very awkwardly. When first put on any surface they jump about and move the third pair of legs desperately with the swimming motion, but as soon as they get their bearings, they begin to crawl rather slowly and painfully by means of the first and second pairs of pedes. *Plea*, on the other hand, can very frequently be seen creeping among the water plants in which it hides, and at other times it moves along the surface film, actually *walking* suspended from it, back down of course. On land it *walks*, using all three pairs of pedes.

Corixa swims using both the pedes of the third pair simultaneously, as in *Notonecta*, and the position in the water is back up. On land, it jumps and skips about, the first and third pairs of legs being quite specialized and only the second ambulatorial, which naturally prevents the bug from walking.

In the *Belostomatidæ* I have been unable to make fresh observations on *Benacus* and *Amorgius* (= *Belostoma*, olim), but having had a number of *Belostoma* (*Zaitha*) *fluminea* in my aquaria at various times, I have been able to study this last species with care and to repeat my observations several times. *Benacus* I have never seen in the water. Of *Amorgius obscurum* Dufour I have had several nymphs which were brought to maturity. My recollection is that they move the hind legs together in swimming, confirming Mr. Brimley's observation on *Benacus*. On land they scuffle along pretty rapidly. With regard to *Belostoma fluminea* Say to confirm previous observations, I confined a bred specimen in a glass dish so small that while it could move its legs freely, it was not able to stir from under my magnifier, no matter how furiously it might paddle. It was then stirred up, and its motions could be observed

without much difficulty. The second and third pair of pedes are moved alternately and quite rapidly, the second pair rowing while the third recovers, and the second recovering while the third gives a vigorous stroke. The femora cross each other when the second pair gives the propulsive stroke and are widely separated when it reaches the extreme of the return, the third pair being at the end of the backward movement. The stroke of the second pair of legs in all likelihood merely helps to conserve the momentum imparted by the powerful third pair, which does all the work. The second pair is but feebly set with hairs while the third is provided with abundant fringes along the edges of the tibæ and tarsi. As in other waterbugs, these hair-fringes fold back in the return and expand on the propulsive stroke. *Belostoma* generally swims back up, but at times it moves abdomen up. On land it runs with considerable celerity and ease, employing the two posterior pairs of legs.

Pelocoris I have not succeeded in observing closely. This bug moves its legs so rapidly that they can scarcely be followed. However, the third pair is mainly used in swimming, and the legs are moved together. It runs quite briskly on land and in the water, its natural home, it creeps among the water plants.

The only Nepid I have had the opportunity to observe is *Ranatra quadridentata* Stal., of which I keep a few living ones every summer. I have watched this bug swim repeatedly, and as its motions are quite slow, it has been possible to analyze them much more easily than those of the others. As I have elsewhere noted, *Ranatra* employs in locomotion only the second and third pair of legs, the first being strictly raptorial and prehensile. Further, since *Ranatra* is not one of the swimming waterbugs (in fact its affinities are with land forms as pointed out by Schiödte),* its locomotion under water is rather awkward, to say the least. The pedes move alternately back and forward, the second pair alternating with the third, much as in *Belostoma*, but in a much more leisurely manner. Again, as in *Belostoma*, at one extreme of the

* Ann. Nat. Hist. (4) vi., 1870, p. 225, etc.

strokes, the extremities of the legs are widely separated, and at the other, the femora are crossed, those of the second pair crossing below the third. On land, however, *Ranatra* runs quite rapidly, but the ungainly length of its legs seems to trip it up when in a hurry.

The meagerness of information regarding these habits has led me to the studies outlined above. It is to be hoped that the rising generation of entomologists may give a little less time to hair-splitting classifications and devote its energies to investigations of habits and life-histories of other than economically important groups, or than those which, like butterflies, are largely æsthetic; and to such lovers of the insect-folk do I look for further light on these highly interesting but financially unremunerative subjects.

Notes on the Egg-laying Habits of *Culex curriei* Coq.

BY H. J. QUAYLE, Ames, Iowa.

During the past summer the writer was engaged in mosquito control work along the portion of the San Francisco bay shore extending from San Mateo to South San Francisco. The territory contiguous to the marsh here has long been noted for its abundant supply of mosquitoes, and the species giving the bulk of the trouble was *Culex curriei* Coq.

Early in the campaign, my attention was directed to the fact that larvæ were appearing exclusively in pools that were reached only by the monthly high tides, and which were dry for a portion of each month. This led me to infer that, like the salt marsh species in New Jersey, this species chose the mud of the drying pools rather than water in which to lay its eggs. Consequently mud was taken from such pools and submerged with ordinary sea water when, in the course of two or three days, wrigglers invariably appeared. Another method of studying this egg-laying habit consisted in sinking ordinary soap boxes, with the bottoms first removed, to a depth of two or three inches in the mud of pools, where larvæ were likely to appear. These boxes were thoroughly screened at the top to prevent the entrance of adults, and were kept

from floating away with the tides by means of stakes driven into the ground. When the monthly high tide reached the pool, water covered the mud within the box by seepage from below, the top being above high tide water, and in due time wrigglers would appear inside the box as abundantly as in the pool outside. These experiments, and the fact that throughout the season larvæ appeared in such situations only, convinced me that *Culex curriei* lays its eggs in mud by preference, if not exclusively.

I have negative evidence to the effect that this species winters in the egg state, but space here will not permit of an account of this. During the past year (1905) the eggs first began to hatch in February, the first larvæ appearing on the 20th. Despite the fact that no adults were seen after April, due to the effective control work, larvæ appeared in these temporary pools in increasing numbers with each high tide until June. There is but one explanation for this, and this is, that the eggs do not all hatch with the early spring tides, the majority of larvæ not appearing until the higher temperatures of May and June.

During the season of 1904, a brood of *curriei* appeared each month as regularly as the tides from February to September inclusive, making eight in the season. In arid climates like that of California, where the rains cease in the early spring, the pools along the margin of the marsh depend for their formation entirely upon high tide water, consequently in the control work of the past summer it was only necessary to visit the marshes once each month, during the week of full moon, to find all the wrigglers that would appear for that month.

This species was also found to be migratory, and in 1904 was found in the hills toward the ocean, ten miles from its breeding ground, along the bay shore. It is hardly necessary to add that this species is a strictly salt marsh form in this section, and is the most abundant and annoying mosquito of the Bay region of California.

How doth the busy little bee
Improve each shining minute?
By flying 'round the can to see
The good things that are in it,

Standards of the Number of Eggs Laid by Insects—IV.*

Being averages obtained by actual count of the combined
eggs from twenty (20) depositions or masses.

By A. ARSENE GIRAULT.

5. ARILUS CRISTATUS Linnaeus.

No.	Date, 1903	No. counted per mass	Successive totals	Av. per egg mass	Max.	Min.	Range	
1	Mar. 20	160	160	160			172	
2		136	296	148				
3		136	432	144				
4		138	570	142.5				
5		114	684	136.8				
6		118	802	133.6				
7		90	892	127.4				
8		167	1059	132.3				
9		159	1218	135.3				
10		126	1344	134.4				
11		125	1469	133.5				
12		133	1602	133.5				
13		119	1721	132.3				
14		153	1874	133.7				
15		105	1979	132				
16		151	2130	133				
17		111	2241	132				
18		42	2283	126		42		
19		172	2455	129.2	172			
20		112	2567	128			42	
20			2567	128	172	42	130	Finals

The egg-masses were collected at Annapolis, Md., in a small peach orchard, where they have been unusually abundant for the past three or four years. In other orchards, in the immediate vicinity, none could be found, nor on trees other than fruit trees, except rarely. The insect apparently shows quite a preference for peach, as a place of deposit for eggs, and it seems to have a tendency to exist in isolated colonies.

Most of the estimates of the number of eggs deposited by this insect fall below the average obtained.

* For the first three of this series see ENT. NEWS, 1901, p. 305; 1904, pp. 2-3, and 1905, p. 167.

M. WITTE says the peace of Portsmouth was signed in order to get rid of the mosquitoes.

Parasitic Hymenoptera of Algonquin, Illinois.—III*.

BY WM. A. NASON, M.D.

PROCTOTRYPIDÆ.

Pristocera armifera Say.

4 specimens ♂.

July 17, 28, 1895.

Aug. 26, 1894.

Sept. 10, 1896.

Lælius trogodermatis Ashm.

1 specimen ♀.

May 30, 1895.

Perisemus mellipes Ashm.

1 specimen ♂.

June 4, 1894.

Goniozus cellularis Say.

1 specimen ♀.

Aug. 12, 1895.

Goniozus columbianus Ashm.

1 specimen ♀.

June 2, 1895.

Goniozus platynotæ Ashm.

1 specimen ♀.

May 11, 1895.

Chelogyne canadensis Ashm.

1 specimen ♀.

June 28, 1894.

Aphelopus albopictus Ashm.

1 specimen ♂.

July 16, 1895.

Lygocerus floridanus Ashm.

1 specimen ♀.

May 25, 1894.

Megaspilus popenoei Ashm.

1 specimen ♀.

Oct. 2, 1895.

Ceraphron flaviscapus Ashm.

1 specimen ♀.

May 21, 1896.

Ceraphron pedatis Ashm.

1 specimen ♀.

May 21, 1896.

Ceraphron punctatus Ashm.

1 specimen ♀.

July 18, 1895.

Ceraphron algonquinus Ash. n. sp.

17 specimens ♀.

May 23 to Sept. 19, 1895.

Co-types, types in Ashm. coll.

Ceraphron salicicola Ashm.

3 specimens ♀.

April 28, 29, 1896.

Phanurus flavipes Ashm.

2 specimens ♀.

May 12, 21, 1896.

Telenomus pusillus Ashm.

1 specimen, ♀.

May 10, 1896.

Telenomus persimilis Ashm.

3 specimens ♀.

May 10, 20, 1896.

Telenomus podisi Ashm.

5 specimens ♀.

Oct. 3, 6, 1895.

May 29, 1896.

Trissolcus euschisti Ashm.

2 specimens ♀.

Sept. 27, 1895.

Oct. 6, 1895.

Trissolcus podisi Ashm.

1 specimen ♀.

May 21, 1896.

Ocoloides howardii Ashm.

1 specimen ♀.

Sept. 17, 1895.

Anteris virginiensis Ashm.

2 specimens ♀.

June 8, 21, 1895.

Amblyaspis californicus Ashm.

1 specimen ♀.

Sept. 27, 1895.

Polymecus picipes Ashm.

1 specimen ♀.

May 10, 1895.

Sactogaster anomaliventris Ashm.

1 specimen ♀.

May 27, 1896.

* Determinations were all made by Dr. Wm. H. Ashmead of Washington, D. C.

Caloteleia marlattii Ashm.

8 specimens ♂, ♀.

Sept. 21, 1893.

Sept. 10, 1895.

May 21 to June 5, 1896.

Polygnotus salicicola Ashm.

4 specimens ♂, ♀.

May 20, 21, 26, 1896.

Proctotrypes rufigaster Prov.

4 specimens ♂, ♀.

Sept. 13, 1894.

May 23, 1895.

June 21, 1896.

Proctotrypes terminalis Ashm.

1 specimen ♀.

Oct. 16, 1895.

Proctotrypes abrupta Say.

1 specimen ♀.

May 25, 1894.

Proctotrypes obsoletus Say.

1 specimen ♀.

Proctotrypes simulans Ashm.

2 specimens ♀.

May 6, 1895.

Anectata hirtifrons Ashm.

1 specimen ♀.

July 3, 1895.

Paramesius terminatus Say.

1 specimen, ♀.

July 29, 1895.

Paramesius pallidipes Ashm.

2 specimens ♂, ♀.

Aug. 26, 1894.

Aneurhynchus virginicus Ashm.

1 specimen ♀.

Oct. 16, 1895.

Galesus quebecensis Prov.

1 specimen ♀.

Oct. 4, 1893.

Tropidopria conica Fabr.

4 specimens ♀.

June 30, 1894.

May 3, 1896.

Loxotropa ruficornis Ashm.

1 specimen ♀.

Sept. 19, 1894.

Loxotropa abrupta Thoms.

1 specimen ♀.

Oct. 6, 1895.

Loxotropa californica Ashm.

1 specimen ♀.

July 8, 1895.

Diapria californica Ashm.

1 specimen ♀.

May 26, 1896.

Trichopria pentaplasta Ashm.

1 specimen ♀.

Aug. 31, 1894.

Trichopria popenoei Ashm.

1 specimen ♂.

May 30, 1895.

Phænopria minutissima Ashm.

1 specimen ♀.

June 26, 1894.

Basalys fuscipennis Ashm.

1 specimen ♂.

Sept. 19, 1894.

MYMARIDÆ.

Gonatocerus welateri Ashm.

1 specimen ♀.

May 10, 1896.

Cosmocomma howardii Ashm.

1 specimen ♀.

May 10, 1896.

Cosmocomma maculipes Ashm.

5 specimens ♀.

May 10 to 13, 1896.

PELECINIDÆ.

Pelecinius polyturator Drury.

1 specimen ♀.

CYNIPIDÆ.

Neuroterus nigrum Gill.

3 specimens ♀.

April 11, 16, 1896.

Neuroterus noxiosus Bass.

1 specimen ♀.

May 25, 1895.

Neuroterus vernus Gill.

5 specimens.

May 6, 1896.

- Ceroptres tuber* Fitch. .
7 specimens ♂, ♀.
June 10, 1896.
- Synergus lana* Fitch.
7 specimens ♂, ♀.
July 23, 1895.
July 25, 1895.
July 10, 1896.
- Callirhytis seminatar* Harris.
2 specimens ♀.
April 13, 1895.
April 23, 1895.
- Anacharis marginata* Prov.
4 specimens ♀.
Aug. 8, 1895.
Aug. 12, 1895.
- Figitodes 5-lineata* Say.
15 specimens ♂, ♀.
June 4, 14, 1894.
July 19 to Sept. 10, 1895.
June 1, 1896.
- Figites inermis* Prov.
1 specimen ♀.
- Figites floridanus* Ashm.
13 specimens ♂, ♀.
June 24 to Sept 17, 1895.
June 1, 1896.
June 10, 1896.
- Kleidotoma nigrosus* Ashm.
2 specimens ♀.
Sept. 27, 1895.
Oct. 2, 1895.
Co-types, type in Ashm. coll.
- Kleidotoma bakeri* Ashm.
6 specimens ♂, ♀.
May 3 to June 13, 1896.
Aug. 12, 1895.
- Hexaplasta monilicornis* Ashm.
2 specimens ♂, ♀.
May 12, 21, 1896.
- Hexaplasta erythroceræ* Ashm.
1 specimen ♂.
May 10, 1896.
- Eucoila rubripes* Ashm.
1 specimen ♀.
June 13, 1895.
- Eucoila vulgaris* Ashm.
21 specimens ♂, ♀.
May 17 to Sept. 12, 1894.
June 11 to Sept. 17, 1895.
May 10, 24, 1896.
- Eucoila mellipes* Say.
1 specimen ♀.
May 21, 1896.
- Eucoilidea canadensis* Ashm.
2 specimens ♂, ♀.
- Eucoilidea longicornis* Ashm.
4 specimens ♀.
June 10, 1895.
May 3, 21, 1896.
June 21, 1896.
- Psilodora impatiens* Say.
2 specimens ♀.
July 10, 1894.
June 10, 1896.
- Melanips canadensis* Ashm.
1 specimen ♀.
Oct. 5, 1895.
- Melanips subcompressa* Prov.
1 specimen ♀.
Oct. 2, 1895.
- Melanaspis iowensis* Ashm.
2 specimens, ♀.
Sept. 17, 1895.
- Solenaspis singularis* Ashm.
1 specimen ♀.
July 25, 1895.
- Solenaspis hyaliniformis* Ashm.
1 specimen ♀.
- Solenaspis abnormis* Ashm.
1 specimen ♂.
June 10, 1896.
- Trybliographa anthomyiæ* Ashm.
1 specimen ♀.
April 20, 1896.
- Heptamerocera marlatti* Ashm.
2 specimens ♀.
May 10, 1896.
- Tetrahapta nasoni* Ashm.
2 specimens ♀.
May 3, 1896.
May 13, 1896.

Determinations of Some Texas Coleoptera With Records.

BY ELBERT S. TUCKER.

Museum Assistant in Systematic Entomology University
of Kansas, Lawrence.

On account of personal interest in the insect fauna of Texas, due to a collecting trip to Galveston, in May, 1903, as a member of a party under direction of Dr. F. H. Snow, for the University of Kansas, the writer recently agreed to name some beetles belonging to the Agricultural and Mechanical College of Texas, at College Station, Brazos County, at the request of Mr. A. F. Conradi, the Acting State Entomologist. Mr. Conradi proposed as an inducement for the work that a list of determinations would be helpful in making up a general list of the Coleoptera of Texas, and the names and records herewith show the results of study of the specimens which he supplied. All determinations were personally made by comparison with named specimens in the collection of beetles of the University of Kansas and with the aid of literature, except for that portion of the list where special credit is given to authorities to whom the specimens were submitted in cases of uncertainty. With the exception of *Balaninus victoriensis* Chitt., all of the beetles were collected in Texas, mostly at the Agricultural and Mechanical College, to which institution they have been returned, less a few duplicates retained by kind permission.

The arrangement follows Henshaw's check list by numbers when given.

Family CICINDELIDÆ.

- 19a. *Cicindela scutellaris* Say, var. *unicolor* Dejean. Wellborn, Brazos River, March 22, 1904.
- 32. *Cicindela vulgaris* Say. Wellborn, Brazos River, March 22, 1904.

Family CARABIDÆ.

- 184. *Calosoma lugubre* LeConte. College Station.
- 220. *Scarites subterraneus* Fabricius. College Station, March 31, 1904.
- 387. *Bembidium variegatum* Say. College Station, May 9, 1903.
- 617. *Evarthrus heros* Say. Comanche, March 17, 1904.
- 847a. *Casnonia pennsylvanica* Linnæus, variety *suturalis* Chaudoir. College Station, January 30, 1903; Buffalo Springs, May 5, 1903.

935. *Pinacodera platycollis* Say. College Station, January 4, 1904. Striæ not deep; abdomen protrudes farther beyond elytra than with compared examples, regarding which Mr. Charles Liebeck has written: "about the usual form; the extent of abdominal segment beyond the elytra is variable."
1120. *Harpalus gravis* Le Conte. Waco, September 20, 1902, collected by L. H. Scholl.
1201. *Anisodactylus piceus* Le Conte. College Station, February 27, and May 1, 1904; Avalon, April 12, 1904. The brownish colored examples were probably freshly emerged, therefore had not developed to black.

Family GYRINIDÆ.

1539. *Dineutes carolinus* Le Conte. College Station.

Family COCCINELLIDÆ

3064. *Cycloneda sanguinea* Linnæus. College Station, May 12, 1904 May 10, 1905, C. E. Sanborn. Predaceous on plant lice.
- 3065a. *Olla abdominalis* Say. Sabinal, May 24, 1904.
3084. *Exochomus contristatus* Muls. College Station, May 10, 1905. C. G. Sanborn. Predaceous on plant lice.
3135. *Scymnus terminatus* Say. College Station, August 8, 1904.
3156. *Scymnus tenebrosus* Muls. College Station, May 10. C. E. Sanborn. Predaceous on plant lice.

Family EROTYLIDÆ.

3202. *Languria tædata* Le Conte. College Station April 12, 1903.

Family ELATERIDÆ.

4085. *Lacon rectangularis* Say. College Station, February 27, 1904.

Family BUPRESTIDÆ

- 4639a. *Chrysobothris femorata* Fabricius, variety *alabamæ* Gory. Kosse, April 19, 1904.
4750. *Agrilus muticus* Le Conte. College Station, April 28, 1903, and April 7, 1904.

Family MALACHIDÆ

5007. *Collops balteatus* Le Conte. Wellborn, Brazos River, March 29, 1903: College Station, July 27, 1902.

Family CLERIDÆ

- 5215a. *Chariessa pilosa* Say, variety *onusta* Say. College Station, April 12, 1903.

Family PTINIDÆ.

5356. *Amphicerus bicaudatus* Say. Corsicana, March 11, 1904.

Family SCARABÆIDÆ

5535. *Aphodius serval* Say. College Station, January 7, 1904. Smaller than compared examples, more deeply striate with confluent punctures, and with slightly different markings, regarding which Mr. Charles Liebeck has written: "about the usual size; markings variable."
5581. *Ochodæus biarmatus* Le Conte. Sabine, May 24, 1904.
5591. *Bolboceras lazarus* Fabricius. College Station, April 14, 1904.
5691. *Macrodactylus angustatus* Beauvois. College Station, March 30, 1904.
5692. *Macrodactylus uniformis* Horn. College Station, March 30, 1904.
5742. *Lachnosterna torta* Le Conte. College Station, July 8, 1904.
5894. *Allorhina nitida* Linnæus. College Station, July 23, 1904.
5901. *Euphoria kernii* Haldeman. Cedars, May 28, 1904.
5941. *Trichius viridulus* Fabricius. Wellborn, Brazos river, March 30, 1904.

Family CERAMBYCIDÆ.

5953. *Mallodon dasystomus* Say. College Station.
5955. *Mallodon serrulatus* Le Conte. Wellborn, Brazos River, June 24, 1904.
5962. *Prionus imbricornis* Linnæus. College Station, May 1, 1904.
6008. *Callidium antennatum* Newman. College Station, February 5, 1904.
6038. *Chion cinctus* Drury. Victoria, August 13, 1904.
6050. *Romaleum atomarium* Drury. College Station, June 10, 1904.
6115. *Callichroma plicatum* Le Conte. No data.
- 6127a. *Tragidion coquus* Linnæus, variety *fulvipenne* Say. College Station, February 18, 1903.
6196. *Neoclytus luscus* Fabricius. Wellborn, Brazos River, June 24, 1904.
6210. *Neoclytus erythrocephalus* Fabricius. Wellborn, Brazos River, August 12, 1904.
6471. *Ataxia crypta* Say. Manor, October 5, 1904.

Family CHRYSOMELIDÆ

6725. *Fidia viticida* Walsh. No data.
6800. *Chrysomela disrupta* Rogers. Courtney, October 7, 1902. Collection of L. H. Scholl.
6821. *Chrysomela auripennis* Say. College Station, December 12, 1903.
6978. *Haltica nana* Crotch. College Station, September 19, 1903. Verified by Charles Liebeck.
7032. *Mantura floridana* Crotch. College Station, May 1, 1903.
7051. *Chætocnema opacula* Le Conte. College Station, May 1, 1903.
7055. *Chætocnema confinis* Crotch. College Station, May 1, 1903.

Family TENEBRIONIDÆ.

- Emmenastus convexus* Le Conte. Coleman, August 23, 1902.
7201. *Epitragus acutus* Le Conte. Sabinal, May 24, 1904.
7359. *Eleodes seriata* Le Conte. College Station.
7426. *Opatrinus aciculatus* Le Conte. College Station, December 20, 1903.
7438. *Blapstinus pratensis* Le Conte. Colorado, August 11, 1903. College Station, April 12, 1903, and February 27, 1904.
7573. *Helops farctus* Le Conte. College Station, June 10, 1904.

Family MORDELLIDÆ.

7780. *Mordella scutellaris* Fabricius. College Station, September 16, 1902.

Family ANTHICIDÆ.

7869. *Eurygenius wildii* Le Conte. No data.

Family MELOIDÆ.

8018. *Henous confertus* Say. College Station, May 28, 1903; Wellborn, Brazos River, June 24, 1904.
8083. *Epicauta sericans* Le Conte. Montgomery, August 24, 1903.
8123. *Pomphopœa texana* Le Conte. Thornberry, April 4, 1903.

Family ATTELABIDÆ.

8224. *Attelabus analis* Illiger. College Station, July 27, 1904.

Family OTIORHYNCHIDÆ.

8242. *Ophryastes vittatus* Say. Comanche, November 14, 1904.
8340. *Eudiagogus pulcher* Fabræus. Wellborn, Brazos river, August 27, 1904. College Station, January 30, 1903.

Family CURCULIONIDÆ.

8370. *Apion ovale* Smith. Rockdale, June 22, 1901.
8478. *Pachylobius picivorus* Germar. Hughes Springs, May 11, 1904; College Station, June 10, 1904; Dekalb, August 1, 1904. The last in prime condition, not rubbed nor smeared.
8546. *Desmoris constrictus* Say. College Station; Centre Point, June 1, 1904. Regarding this, Mr. A. F. Conradi has written: "This species occurs abundantly over the entire settled portions of the State of Texas, definitely known."
8615. *Magdalis barbata* Say. Howe, March 22, 1904.
10985. *Anthonomus grandis* Boheman. College Station, June 12, 1904.
8726. *Conotrachelus naso* Le Conte. College Station, October 20, 1904.

- 8741 *Rhysematus palmarcolis* Say. Frost, May 28, 1904. "Hillsboro, Malakoff, Victoria, and in fact it occurs all over the State," writes Mr. Conradi. Variety, with costæ, apical margin and spots on elytra rusty colored. Verified by Charles Liebeck.
8746. *Chalcodermus æneus* Boheman. Denison, June 27, 1904.
8760. *Acalles porosus* Le Conte. San Antonio, March 30, 1904; Martindale, April 14, 1902.
8902. *Aulobaris ibis* Le Conte. College Station, December 18, 1904.

Family BRENTHIDÆ

8967. *Eupsalis minuta* Drury. Wellborn, Brazos River, June 24, 1904.

Family ANTHRIBIDÆ.

9222. *Cratoparis lugubris* Olivier. College Station, January 4, 1904.

The species for which special mention should be given for their determination are as follows :

1068. *Discoderus impotens* Le Conte. College Station, May 1, 1904. Determined by Charles Liebeck.
3098. *Brachyacantha bollii* Crotch. College Station, June 4, 1903. Determined by Charles Liebeck as "large form." The yellow spaces of basal and median portions of elytra are solidly fused, without any indication of spots. College Station, May 10, 1905. C. E. Sanborn. Predaceous on plant lice.
4575. *Psiloptera drummondi* Laporte & Gory. College Station, June 20, 1902. Determined by Charles Liebeck.
10352. *Fidia cana* Horn. Dripping Springs, May 17, 1904. Determined by Charles Liebeck. Badly crushed and broken.
7179. *Conæcus ovipennis* Horn. Comanche, August 17, 1901. Determined by Charles Liebeck.
8326. *Achrastenus griseus* Horn. Lovelady, March 24, 1904; Grape Vine, no data; Sidney, April 4, 1904. Determined by Charles Liebeck.
- *Balaninus victoriensis* Chittenden. Mead, Indian Territory. September 20, 1904; Lone Wolf, Oklohoma, September, 1904. Determined by F. H. Chittenden.
8990. *Sphenophorus cariosus* Olivier. Moody, March 25, 1904. Determined by F. H. Chittenden.
9006. *Sphenophorus compressirostris* Say. No data. Determined by F. H. Chittenden.

Summary : Species personally determined, 76

Species specially determined 9

Number of species reported 85

Editors of ENTOMOLOGICAL NEWS.

Dear Sirs :

As to your course in publishing the injurious letter of Dr. Jno. B. Smith, of New Jersey, in your Nov. issue, only recently noted, it would seem a safe policy for any publication first to make some inquiry as to whether there might not be an animus beneath and no basis for such serious statements, and even if found to be true, to be cautious in uttering a libel.

You ask me to be brief in writing and say you do not court controversial articles. I should have supposed the opposite to be the case, and rather that you would be glad to give one so traduced the largest opportunity.

The pretext for the attack is that Dr. Smith's name is given as one of the Advisory Board of Entomologists of the Am. Mosquito Extermination Society in your October reprint of a circular sent out generally by the Society in July last and before any declination had been received.

On February 19, 1904, we sent out a tentative circular—headed "Printer's Proof"—to the two Advisory Boards, saying to each person, including Dr. S., that he had been selected on such board, and closed thus: "We should be greatly pleased to have your written acceptance of the part appointed to you by the Executive Committee, but, knowing your interest in the work, we will take the liberty of assuming, in case we do not hear from you directly, that the appointment is accepted." Neither Dr. S. or any one else declined and many even wrote acceptances and all names thereafter permanently appeared. There was every evidence that he tacitly accepted (and it is to be hoped that no bare technicality covers his statement that his name appears without his permission), for instance, his taking part in the December, '05, Convention and making no objection to the appearance of his name on the letterheads and prints of the Society, many of which he received.

I had no knowledge of the bitterness which Dr. S. was nursing until April 7, '05, when he wrote me of this, among other things: "It may be well to advise my colleagues (on the Ent. Adv. Bd.) who have been working on similar lines

of what they have to expect from the Society, whose mouth-piece you seem to be, that they may be on their guard." And on the 14th of April he wrote on this subject to the Executive Committee of the Society: "So far as the list is concerned, my own name appears without authority, and I am advised by others of my colleagues that they are in the same position." (I should be glad to know of anyone not receiving the printed circular letter of February, '04, for I find that every name is checked as having been notified of their selection.)

Dr. Smith said nothing of wanting his name omitted until a similar tentative circular for the next year was sent out on August 26th last, which he acknowledges, and says: "I very much prefer that you drop my name entirely from all connection with the A. M. E. Society," which was then done. His lonely position is referred to, but not by name, in Bulletin No. 2, sent you, dated September 26, '05 (which we trust you will not be deterred from reprinting, at least in part), where the paragraph begins: "The character and reputation of the gentlemen who have consented to serve on the Executive Council and the Advisory Boards of the Society, reflect the confidence of the community in our work," and which gives the distinguished names of many who unnecessarily had written of their pleasure and honor in the case.

I may say that a number of our officials, in answer to his abusive letter of April 14, '05, had written Dr. S. that he must be laboring under a misapprehension and tried to calm him down, but, apparently, fruitlessly, for his recent letter to you says: "Such use of my name was without my permission and in spite of a very decided protest." Please note the dates—that he declines on August 30th for the first on receipt of a new nomination and now protests, because his name appears in a July circular, saying he had tried to get his name off the list, as though we coveted the doubtful honor of keeping it on against his will. So much for that insinuation!

But now, not for the pretext, but for the real though strange point of his grievance, of which I first learned early in March, 1905, when a mutual friend sent me a press clipping with a severe comment. It gave a news item from

Washington to the effect that Dr. S. had advised his representative in Congress that the Bill (which the Society had caused to be introduced. W.) was an unworthy one, that the Society was composed of only a few persons and that Mr. Weeks was simply working for a job. Dr. S. had doubtless seen in the papers that the Secretary's Representative and the Secretary had spoken in its favor before the Committee on Interstate and Foreign Commerce. The fact that the subject was before that committee showed the character of the bill, which was that the President appoint a commission to act with one from New York and New Jersey, if such be appointed, to consider the questions of the economic relief of the conditions existing in the great marshes bordering on New York and those of Long Island. The bill was modelled after a similar one which failed through being introduced late in the previous sessions at Washington and Albany. When the question came up at a large meeting of the Executive Council of the Society in January, '05, as to whether the bill should be re-introduced, the treasurer, Mr. Frederick C. Beach, editor and large owner of the *Scientific American*, amended so that the bill should be also introduced in New Jersey, and later agreed to its introduction, as he knew a member, and was furnished with a copy of the New York bill of 1904 for a guide. The Trenton bill mentioned certain officials for its commission, and left six unnamed, so that (to answer Dr. S.) if the Governor thought he was a suitable person for such a commission he could have appointed him.

But the bill was not one for entomologists to consider but mainly for engineers. It related to broad commercial and economic questions, which only persons skilled in such could intelligently consider. It seems rather strange for an entomologist to court a place on such a commission, when mosquitoes were only incidently involved. And, yet, because he was not directly informed and specifically named, though he knew in various ways of such action being proposed (for it was mentioned in Bulletin 1, of November, '04, and in press items sent to him), he worked himself into a rage, dangerous to himself and everybody else, and tries, by abusive letters to

the members, to discredit the secretary and break up the Society for the temerity of its secretary who followed the direction of its executive authority.

In the letter to me of April 7, '05, before referred to, Dr. S. writes of the Trenton bill being introduced at my request. He also inquires in the letter to members of our Ex. Com. (April 14, '05), whether the introduction of the bill was really an action of the Ex. Com., and whether "it is the policy of the society to ignore and condemn as unworthy of consideration all work not done under its seal." He goes on at great length and with an evident feeling of personal consequence, with which his letter to you is also saturated: "It is a matter of importance to me to know whether this society acts through a responsible committee or through an irresponsible secretary who assumes the right of speaking for it." In this letter to the committee he enclosed a copy of the one to me of April 7, wherein he recites his claims to recognition, as well as of others, and says: "You were careful to keep from all these parties all knowledge of this measure and to carefully exclude them from the commission proposed in your bill. You placed the treasurer of your society, for which you purported to act, in the light of an ignoramus by crediting him with preparing the bill." The fact was, I had not mentioned a single official to be appointed on the New Jersey commission.

Mr. Beach immediately wrote Dr. S. that it was he who, at a large meeting of the Executive Committee, moved the introduction of the N. J. bill, that he assumed all responsibility for the bill, completely taking all blame, if any. And yet, Dr. S. in the NEWS, repeats the same charges against me as to the bill and "sneak" legislation. I wish I could give full copies of these strange letters of Dr. S. They are filled with the most high-tempered words.

A number, besides Mr. Beach, wrote Dr. S. a "soft answer" to his "personal letter to every member of the Executive Committee," but it failed to turn away his wrath. It was predicted that "if he is of normal constitution he certainly will, on reflection, be mortified at the position in which

he has placed himself." But, not at all, he repeats the same things to you, though corrected by Mr Beach, and assured of his error by a number who replied and was even still "warmly invited to co-operate with us, as our aims are one."

On May 30th I wrote him also a courteous note, referring to his attacks and threats, which was delayed by serious illness from gratuitous over-work in the Society, saying: "I would be much obliged if you will inform the Society to what you refer in letter of April 7th, 'So far the Am. Mos. Ex. Soc. has appeared to be a hindrance instead of an aid to the rational methods of dealing with the mosquito question in New Jersey.' If we cannot aid, we certainly do not wish to hinder." But no answer came.

Is there any cause for these injurious acts? None whatever that I am aware of. I have had no difficulty with Dr. Smith. On the other hand, I have always, individually and as secretary, treated him with due respect. In the arrangement of the programs of our conventions he has always been accorded an important part, and though at these times he has taken occasion in his addresses to cavil at something in the arrangement, it has been passed unnoticed.

I have given the representativeness of Dr. Smith time and courteous attention when he has sent them to look over my work in the field and returned messages with them that at any time I should be glad to give him any benefit of my experience for his work.

On social occasions he has received all due courtesy and attention.

And yet I have never met Dr. S. intimately, and never personally but three or four times. So I can only judge him by insight. I have had many letters from him, and I must refer to the very first one—of some years ago—for the impression made on my mind then was that any one, speaking as he did therein of his confreres, enjoyed controversy, and surely was one to be careful of. This feeling was strengthened later when he wrote to me disparagingly of those persons in his own State who sought advice on the mosquito propositions from different experts, for he had learned that some owners had presumed to call me into N. J. to investigate and report.

It was through no fault of mine that this condition of things existed and these calls came, and that since then and even now for some weeks I have been making mosquito surveys in that State notwithstanding the great activity of Dr. S. in the cause. In every case these calls have been the result of my previous work elsewhere, and for this I should not suffer. I have not sought to invade another's territory, if one could make the singular claim of exclusive territory.

This leads me to say that I can only think, and others who know Dr. S. much better confirm the idea, that it is because of the results of my work and because many times I have gone into N. J. to speak and work, that he holds these bitter feelings—the promptings of a strange jealousy. It would seem that the common enemy was numerous enough to engage all the attention of all the fighters and that they should not be compelled to fight at law or otherwise to defend themselves.

I will ask that the covert advertisements of himself which Dr. S. injects in his letter, be noticed in view of his saying the Society “is simply an attempt to advertise its secretary,” thus implying incompetency against those in the society—some of the most astute men in the country. May I assure your readers of the fact that though I have given some of the best years of my life to the society and cause and broken my health largely through these efforts, I have never received a single fee as the result of my relation to the society or any compensation for my incessant labors in it. The little puff introduced of a close figure of an estimate and a contract is easily explained by the fact that Dr. S. has frequently written of the cost of ditching and a contract based on that might be high or low.

Dr. Smith knows of the explanation of the use of Gov. Murphy's name as chairman of the first convention, for it is stated in the published report of the convention, and yet he speaks of the Governor's emphatic refusal to act as presiding officer. That little insight indicates that Dr. S. saw the governor or his secretary and knew of some emphatic refusal which never reached me. Was there any reason?

Some strong statements in the letter to you as to the pro-

gress of certain mosquito extermination work compels me to say that I greatly fear there is going to be sad disappointments and that the cause is going to be greatly retarded by a heavy failure in promised results. All mosquito work demands the most radical methods and anything less should not be recommended by anyone who appreciated the necessities of the case, unless he was blinded by an overruling confidence in his abilities and knowledge.

Personally, I would prefer to await results and then let others do the puffing and not myself. I should prefer to be less dogmatic, less opinionated and very careful not to draw positive generalizations on insufficient data, especially in investigations as new as those of mosquito habits and destruction.

A few years will be sufficient to determine whether a radical or a superficial course of treatment is the better.

But to close what has been made lengthy by the number of insinuations, taking but a word or two to express, possibly it would have been safer if attention had been paid to the injurious words of Dr. S. in the first instance, for usually a person of the mind he seems to have is only encouraged by the weakness of his victims.—HENRY CLAY WEEKS, Bayside, L. I., New York.

Harrisimemna trisignata Walk.

BY RICHARD F. PEARSALL.

In the October number of ENT. NEWS a brief note by Mr. Franklin Sherman, Jr., upon the pupation of the species, closes with these queries, viz :—

1. If this habit (as given in his text) has been noted before.
2. What the normal pupating habit of the species is.
3. Whether such habit is known in any other Lepidopterous insect.

On July 8, 1897, in the Catskill Mountains I took two of these larvæ feeding upon the leaves of the Bush Honey-suckle (*Diervilla trifida*). They were nearly full grown and when captured were greatly disturbed, holding with the hind legs to the twigs and elevating the body, at the same time shaking in a tremulous fashion, as if seized with a chill, quite geome-

triform in appearance. Not knowing their habits I placed a quantity of trash in the glass jars and one of them commenced gnawing at the small pieces of wood. Seeing this I supplied a larger piece of dead limb, perhaps an inch in diameter, into which my larva made its burrow, sealing it up, exactly as described by Mr. Sherman. The moth came out the following year. This then may be accepted as its normal habit.

Now as to the third query ; and here I record one of the greatest disappointments I ever experienced in the rearing of larvæ.

In the same year while examining a group of Choke Cherry (*Cerasis virginiana*), second year's growth, I saw on the top of a leaf what I first took to be a mass of bird droppings, but on closer observation it turned out to be a shining, slimy-looking, gray and white larva, about half an inch long coiled up at rest. I put it in a glass jar with food plant and at first it fed only at night. As it grew larger it fed freely during the day, and at its final moult, changed to the most beautiful larva I have seen. It was then about one and one-quarter inches long, of a deep prussian blue, its skin smooth, like silk, marked on the dorsum from the third to the ninth segment, with a series of large oval cream yellow spots, placed crosswise like saddles, one on each segment. From each end of these projected at an angle of forty-five degrees, a narrow spatula-shaped ribbon like appendage of the same cream yellow color. I had never seen such a creature and I tended it carefully. One day I was changing its food and while doing so the dinner bell rang and I left it forgetting in my haste to place the glass cover on the jar. When I returned from my meal, imagine my horror at finding my jar uncovered with the window near it open and my specimen gone. On the floor beneath my table on which the jar stood, I had, some days before, placed two or three pieces of old fence rail, and as I glanced about in my search for it there was my larva calmly boring into one of them. I did not disturb it but watched all afternoon as it cut out rounded pellets and threw them aside, burying itself from sight by night fall and by next morning it had sealed the opening so neatly as to be hardly distinguished from the gray color

of the old wood. Surely after such a piece of good fortune it would disclose the imago, and tell me what it was. For three years I kept that chunk of wood on my hatching box, after carefully carrying it home so as to prevent jaring, and no moth emerged. Finally I split it open, and after this lapse of time the pupa seemed plump and clean. Its shell was granular and tough, reddish in color, much like the pupa of an *Alypia octomaculata*, I kept it a while longer but it never disclosed the imago.

What was it? Can anyone tell me? I have searched the same region and locality every summer since but have never taken it again.

The larva of *Apatela lithospila* also has the same habit of pupation.

On Certain Tropical Ants Introduced Into the United States.

BY WILLIAM MORTON WHEELER.

In a collection of Formicidæ belonging to the Philadelphia Academy of Natural Sciences and sent me for identification by Dr. Henry Skinner, I find a number of specimens of *Monomorium destructor*. This ant, originally described from India by Jerdon,* though introduced into the tropics of the New World, has not been recorded heretofore from the United States. The specimens are labeled "Black Warrior River, Tuscaloosa County, Alabama," and "Seminole Point, Monroe County, Florida," collected by Mr. Clarence B. Moore. As these localities are widely separated, one being at the tip of the peninsula of Florida, the other in the northwestern portion of Alabama, we may infer that the species has either been recently introduced at different points or is already widely distributed in the eastern Gulf States. That it is of comparatively recent importation from the tropics there can be little doubt.

In his original description of *Atta destructor*, Jerdon gives the following brief account of the habits of the diminutive workers: "They live in holes in the ground or in walls, etc.,

* Madras Journ. of Litt. and Sc. xvii, 1851, p. 105, abstracted in Ann. Mag. Nat. Hist. (2), xiii, 1854, p. 47.

and are very numerous in individuals. They prefer animal to vegetable substances, destroying dead insects, bird skins, etc., but also feed greedily on sugar. They are very common in all parts of India, and often prove very troublesome and destructive to the naturalist." The bad reputation of this ant is expressed in two other names which have been given it by Frederic Smith and Gerstæcker, on the supposition that it had not been previously described; the former calling it *Myrmica vastator*, the latter *Myrmica ominosa*. The insect is repeatedly met with in the literature under these and other names like *Monomorium atomaria* and *M. basale*.

There are now three imported species of *Monomorium* in the United States, all of which have probably been carried by ships from their original home in southeastern Asia, namely: *M. pharaonis*, *M. floricola* and *M. destructor*. The first is a widely distributed house-ant, not only in the tropics, but also in temperate Europe and America; the second is tropicopolitan, though it manages to subsist in our northern green-houses; the last, as I have just shown, has begun to spread into temperate North America. In a recent paper* I recorded the introduction of a fourth *Monomorium* (*M. salomonis* Linn), a well-known North African species, into the Bahamas.

Another small tropical ant which has recently gained a foothold in the United States is *Iridomyrmex humilis* Mayr. This species has been taken in numbers in New Orleans by Mr. E. S. G. Titus. As a native of the New World, it was supposed to be confined to South America (Brazil and Argentina). It is not included among the known Mexican or Central American ants, nor can I find any record of its occurrence in the West Indies.

According to Stoll† this ant has also been imported into Madeira where it has become a pest in houses and has supplanted another previously introduced ant (*Pheidole megacephala* Fabr.) which was the house-ant of Madeira in the days of Heer.‡ Some idea of the numbers of *Ph. megacephala* in Madeira in the middle of the last century may be gained from

* The Ants of the Bahamas. Bull. Am. Mus. Nat. Hist. xxi, 1905, p. 89.

† Zur Kenntniss der geographischen Verbreitung der Ameisen. Mitt. d. schweiz. entom. Gesell. x, 3, 1898, pp. 120-126.

‡ Ueber die Hausameise Madeiras. An die Züricher Jugend auf das Jahr 1852 v. d. naturforsch. Gesell. 54 Stuck, 1852, pp. 1-24 Taf.

the following extract from Heer's work : " It occurs throughout the southern portion of the island of Madeira up to an elevation of 1,000 feet in prodigious numbers, especially in hot, sunny places, where it is to be found under eight out of every ten stones that may be overturned. In the city of Funchal there is probably not a single house that is not infested with millions of these insects. They climb to the top stories, issue in swarms from the cracks in walls and floors and keep traversing the rooms in all directions in regular files. They creep up the legs of the tables, along their edges and into the cupboards, chests, etc. On account of their extremely diminutive size they are able to enter the smallest holes and crevices. Even when thousands and thousands of them are killed, there is no reduction in their numbers, as fresh armies are continually arriving." The recent displacement of this pest by another, *Iridomyrmex humilis*, bears a close and interesting analogy to the well-known displacement in Europe and America of the black house-rat (*Mus rattus*) by the brown species (*M. decumanus*). In a similar manner, according to Stoll, another ant, *Plagiolepis longipes* Jerdon, introduced into the island of Reunion from its original home in Cochin China, has driven out some of the primitive autochthonous species. We may also look forward to the appearance of this same ant within the warmer portions of the United States, since it has already been recorded by Pergande from Todos Santos in Lower California.*

Still another foreign ant which has acquired a footing in tropical Florida and probably also in other localities in the Gulf States, is *Prenolepis longicornis* Latreille. It has also become a common species in the green houses of temperate Europe and America. In some of these, as in the Jardin des Plantes in Paris, it has been a permanent resident for more than forty years. It may sometimes be found even on the top floors of the great apartment buildings in New York City. Wasman† has just given good reasons for believing that the

* Formicidae of Lower California, Mexico. Proc. Cal. Acad. Sc. (2) iv, 1894, p. 163.

† Zur Lebensweise einiger in- und ausländischen Ameisengäste 3. Wanderungen von *Colnocera madagascariensis* Woll. (oculata Bel.) mit *Prenolepis longicornis* Latr. Zeitschr. f. wiss. Insect.-biol. Bd. I, Heft 9, Sept. 17, 1905, pp. 384-390.

original home of this ant is India and that it has been carried to all parts of the tropics in ships. He shows that it has been accompanied in these wanderings by two myrmecophiles, a Lathridiid beetle (*Coluocera maderæ*) and a small cricket (*Myrmecophila acervorum* var. *flavocincta*.)

Notes on Collecting in Mexico.

By J. F. McCLENDON, University of Pa., Philadelphia.

In the summer of 1902, while seeking the cool plateau of Mexico as a quiet retreat to pursue my studies, I found near Guadalajara, Jalisco, some Neuropterous insects that were new to me, and the next summer planned a trip to Jalisco to collect insects and some other zoological specimens. Many of the specimens I took have been used in preparation of the *Biologia Centrali-Americana*, and at the request of Dr. P. P. Calvert I give the following account of my trip:

On June 12, 1903, I crossed the border at Eagle Pass and reached Guadalajara by the Mexican International & Central Railways. Most of the suburbs of this city are covered by crops of corn and tobacco, but the ravine of the Santiago forms an admirable collecting ground for an entomologist, and here and in some deserted parks I spent most of my time. The altitude and the frequent rains of this season made the air very cool and most of the insects caught were nearctic, save at the bottom of the ravine, where, amid oranges, bananas and other tropical plants, are found many forms that have strayed from the hot shores of the Pacific. The further down the river I went, the more tropical forms were met with, but as the natives were not inclined to be civil, I did not go further than the Barranca de San Juan. One hideous night at that *hacienda* discouraged my scientific zeal, and I preferred to lose a few hours on mule back each day rather than repeat such an experience. I went up in the mountains as far as Zapotlanejo, about 20 miles east of Guadalajara on horseback, and succeeded in returning with some specimens. Although I did not

have to sleep in the *portal*, as at San Juan the best "room" I could get had no window.

In September I spent a week at Tuxpan, near the construction camp of that branch of the Mexican Central Railway and about 30 miles from the volcano of Colima. That was a lonely place, but the volcano, looking down on all the country round and expressing its varying moods in wreaths of white steam or black smoke or casting a red glow on the clouds at night, was a companion to me. Although much nearer the sea level, Tuxpan is cool in summer and has many nearctic besides tropical forms of insects. The leaf-cutter ant cuts roads through the grass and the Kelep ant swarms up the stems of shrubs in the same field. At this time I did not know that this large ant was the one introduced against the boll weevil, although I looked for the latter in vain. The natives of Tuxpan have some strange ceremonies developed from Indian dances and ideas gotten from Spanish missionaries, and the place is of interest to a tourist. Returning to Guadalajara I remained until the latter part of September, when I left the Republic.

A New Fossil Ant.

BY T. D. A. COCKERELL.

Florissant, not far from Pike's Peak, in Colorado, has long been known as a wonderful locality for fossil plants and insects. It is, in fact, a sort of Tertiary Pompeii where the fauna and flora of an ancient period are almost perfectly preserved in fine mud and sand, ejected by the volcanoes which at that time were in full operation in the Rocky Mountain region. During the present year, collections have been made at Florissant by Judge J. Henderson and Dr. F. Ramaley, of the University of Colorado, and while most of the specimens are plants, there are a few insects. In the first railroad cutting east of Florissant was obtained an excellently preserved spider, *Clubiona arcana* Scudder, ♂; at a different place, the northwest corner of "Fossil Stump Hill," an ant was found belonging to an undescribed species.

***Ponera hendersoni* n. sp.**

♀. Length about 11 mm. ; black ; anterior wing about 8 mm. ; head rather small, length slightly over 2 mm. ; width of abdomen a little over 2 mm. Nervures strong and dark ; the venation is in general similar to that of *P. coarctata* Latr., (cf. Wheeler, Biol. Bull., 1900, p. 47), but differs as follows : Stigma longer and narrower, its lower edge nearly straight ; marginal cell longer, but not approaching so near the apex of the wing, the latter being also more produced ; costal cell broader in the middle, and giving off the basal nervure further from the stigma ; first submarginal cell long, though not as long as the marginal ; the first submarginal extends further basad than in *P. coarctata*, but not so far apicad, as the radial nervure is given off about the middle of the stigma, instead of beyond its middle as in *P. coarctata* ; first discoidal cell longer, being much longer than high, with the first recurrent nervure more oblique ; second submarginal cell about as in *P. coarctata*. Femora rather broad. The abdomen and other parts seem to present no distinctive features, except that the ocelli are smaller and closer together than in *P. coarctata*.

Named after the collector, who is a well-known student of Colorado palæontology. Type in the University of Colorado Museum ; it is intended to publish a figure later in connection with a general account of the Florissant collections.

Children, if you meet a cricket,
Please remember not to kick it ;
Not a youth whose nature's sweet'll
Strike a ladybug or beetle.

If a daddy longlegs passes,
Do not slay it (as alas ! is
Often done by wicked urchins,
Who deserve the soundest birchin's).

When a gnat—that lively hummer,
Which you'll hear when it is summer,
Comes a-buzzing round your hat, it
Is wrong to throw a pebble at it.

Do not think me sentimental
When I ask you to be gentle
With the insect population
Of our free and glorious nation.

If you're kind in this partic'lar,
They will buzz in your auric'lar ;
Every child, of course, can see
What a pleasure that will be.—London Globe.

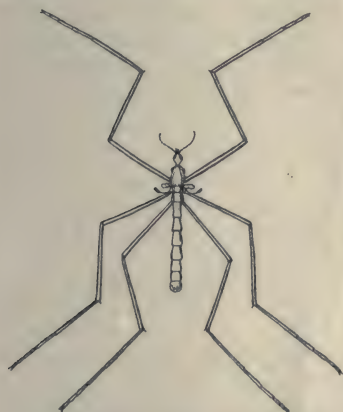
ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., JANUARY, 1906.

It will be remembered that we decided to place on the cover of each volume of the NEWS the most interesting, curious or wonderful insect described from North America in the preceding year. We asked for suggestions from our subscribers as to the selection of the insect, but never received any, so if our selection is poor they can have no legitimate complaint.



Limnophila aspidoptera Coquillett.

Our first effort resulted in a beetle being selected (*Ignotus ænigmaticus* Slosson), the second was a bee, and now we present a dipteran. This curious species was described by Mr. D. W. Coquillett in the Canadian Entomologist, p. 347, 1905. Specimens were collected by Prof. Cockerell on the summit of Las Vegas Mountains, New Mexico, and by Mr. Henry L. Viereck on top of the main range of the Rocky Mountains, near Beulah, New Mexico. These are probably

identical localities. The specimens collected by Mr. Viereck are in the collection of the Academy of Natural Sciences of Philadelphia. In the future we hope to have aid from our subscribers in the selection of each year's insect.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

NOMENCLATURE OF CERTAIN NORTH AMERICAN ODONATA.—Recent work on the "Biologia Centrali-Americana" has directed my attention to questions of nomenclature of some familiar North American species as follows:

1. Hagen, in his Synopsis of 1861, gave, as one of the species of *Libellula*, *L. luctuosa* Burm., and placed *L. basalis* Say as a synonym thereof. In his Synopsis of 1875, he gave *basalis* Say as the name of the species and placed *luctuosa* Burm. as the synonym, and American authors since have followed his later example. Hagen's reversal was apparently due to a change in his ideas as to the relative priority of Burmeister's and Say's names, both of which were published in 1839. On this question I have no fuller information than that given by Hagen in *Psyche*, v, p. 369, but the correct name of this species now appears to be ascertainable on other grounds. Mr. Kirby, in his catalogue of 1890, p. 29, uses *luctuosa* as the name of the species and *basalis* as the synonym. He does not indicate his reason for so doing, as he has done on the same page in the case of *axilena* vs. *lydia*. A study of this Catalogue, however, led me to the following data: Newman, in 1833, described *Symptetrum basalis* (now regarded as a synonym of *S. sanguineum* Müller, 1764). Stephens, in 1835, redescribed Newman's species as *Libellula basalis*; consequently both Say's *Libellula basalis* of 1839, and *Libellula basalis* Burm., 1839, a name for a still different species, are homonyms and must be rejected. The proper names and the synonymy of the last two species would therefore be—

***Libellula luctuosa* Burm., 1839.**

Libellula basalis Say, 1839.

Libellula odiosa Hagen, 1861.

Belonia luctuosa et *odiosa* Kirby, 1890.

***Tramea incerta* (Ramb., 1842).**

Libellula basalis Burm., 1839.

Tramea basalis Kirby, 1890.

2. Hagen, in his Synopsis of 1861, established the genera *Erythemis* (p. 168), under which stand as species: 1. *furcata* Hag., 2. *bicolor* Erich., 3. *longipes* Hag., and *Mesothemis* (p. 170) including 1. *simplicicollis* Say, 2. *collocata* Hag., 3. *corrupta* Hag., 4. *illota* Hag., 5. *attala* Selys, 6. *mithra* Selys, 7. *longipennis* Burm. He did not specify a type-species for either genus. This was first done by Mr. Kirby, in his Revision of the Libellulinae of 1889, in which he named *bicolor* as the type of *Erythemis*, and *simplicicollis* as that of *Mesothemis*. *Bicolor* is a synonym of *peruviana* Ramb., and between this species and *simplicicollis* I can find no differences of generic value. Both *peruviana*

(*bicolor*) and *simplicicollis* must be placed in the same genus, and as *Erythemis* precedes *Mesothemis* in Hagen's work, *Erythemis* must be the name of that genus. Consequently a very familiar dragonfly of the United States must be styled *Erythemis simplicicollis* (Say).

A different conclusion will be drawn by those who take the first species enumerated under a new generic name as the type thereof. *Furcata* Hagen is generically different from *bicolor* Erichs. and is a *Cannacria* Kirby. To the "first species = type" school, *simplicicollis* will remain a *Mesothemis*, and *Cannacria* will disappear as a synonym of *Erythemis*. Present rules, however, would appear to favor the preceding view, which is that which has been adopted for the 'Biologia.'

3. I merely mention that in the 'Biologia' return has been made to the original spelling *Æshna*, instead of the later *Æschna*.

PHILIP P. CALVERT.

CORRECTION TO THE LIST OF NEW ENGLAND ODONATA.—In the recently (October, 1905) published list of New England Odonata (Occasional Papers, Boston Soc. Nat. Hist., vii, Fauna of New England .6. List of the Odonata), I included *Argia apicalis* (Say) on the authority of the late Prof. Harvey. Prof. Harvey's record was published in the NEWS, ii, p. 51. Mr. E. B. Williamson, who recently acquired part of Prof. Harvey's collection, writes me as follows: "I see *Arg. apicalis* is recorded from New England on Harvey's collecting. You will notice in Harvey's record in ENT. NEWS that this specimen was taken same date and place as *putrida*. A few days ago I started to list the Harvey collection . . . and I find a ♀ *Argia* labelled by him *apicalis*, date as recorded in ENT. NEWS, associated in box with 2 ♀ ♀, unlabelled. All three are very adult specimens of *putrida*. As you have probably noticed, the very adult ♀ ♀ of *putrida* become pearly-blue like *apicalis* and not a dense, dingy-white pruinose like old males." *Apicalis* is consequently to be stricken from the list, until, as is likely, it be found in New England.—PHILIP P. CALVERT.

RARE OHIO LEPIDOPTERA.—I send a few records of rare captures which may be of interest. On July 2nd, 1905, I took a fresh specimen of *Calephelis borealis*, and on October 3rd a torn specimen of *Catopsilia eubule*, both new to this locality. While bush-beating for larvæ on linden I got a larva, which hatched out on August 3rd a fine ♂ of *Thecla m-album*. Only once before has this been taken here. I saw in the NEWS that *Eros aurora* had been taken in numbers in the East. On September 17th, around two rotten stumps, I took twenty-five fresh specimens, and might have taken more if it had not set in to rain. I took several more later. Previous to this I only had one specimen. I have been especially interested in the Bombycidae and Geometridæ, and the past season reared quite a number of the larvæ of those species.—G. R. PILATE, 321 Forest Avenue, Dayton, Ohio.

OUR criticism of the hasty publication of entomological facts has brought us a letter from Mr. Sherman and a note in print from Miss Soule. Both make the excuse that literature is difficult of access. It is a maxim that ignorance of the law excuses no one. Ignorance of previous work should result, not in hasty publication, but in consultation of someone better posted, or in discreet silence. The officers of the U. S. National Museum will always reply to questioners seeking information of this nature. We would reply to Miss Soule that we have no objection to "popular" articles that are frankly such and give proper credit to antecedent work.

We have criticised authors for hasty and uncritical work ; but there is another aspect of the case. What is the condition of editorial responsibility in a journal that accepts these articles without question?—HARRISON G. DYAR.

GUELPH, CANADA, Dec. 9, 1905.

EDITOR NEWS :—

I must confess to a feeling of relief upon seeing Dr. Dyar taken to task in the last issue of the NEWS by both Dr. Skinner and Miss Soule, for it shows that I am not alone in my dislike for unnecessary and caustic rebukes. The brief article which I recently contributed to the NEWS on the pupating habit of *Harrisimemna trisignata* was not specially intended for use as a leading article, but even if it did so appear it does not seem to me that it need bring out any severe rebuke. Two other entomologists kindly wrote me immediately after the appearance of the article giving me the information I needed, and which I asked for, while Dr. Dyar published a brief and caustic rebuke a month later, so that it was of no help to me whatever. I do not see the use of one being so anxious to criticise every imaginary or real mistake. I wrote Dr. Dyar a personal letter containing much the same sentiments expressed in Miss Soule's note, and had no intention of taking this matter into print and only do so now lest my reticence in the matter should be misunderstood. If anyone will read my article in the NEWS for October, I think he will agree that Dr. Dyar's remarks in the issue for November are needlessly harsh, if not altogether uncalled for.—FRANKLIN SHERMAN, JR.

We can't refrain from noticing Dr. Dyar's criticism as it is so manifestly unjust. We were not previously aware that the law and entomology were on a par, but, as Dr. Dyar says they are, that is the end of it. If writers for the NEWS wish to submit their articles to the officers of the U. S. National Museum we offer no objection. That the *polyphemus* moth has stemmed and stemless cocoons has been known to the Editor of the NEWS for at least thirty years, and, moreover, he published the fact six years before the citation given by Dr. Dyar. He is also aware that the same thing was published in 1797, and by later writers, including Dr. Riley, in the Missouri Reports. The writer wrote to Miss Soule stating he had found many such cocoons, but as he was interested in her studies of the matter and thought other NEWS readers would

be also, he put the article in the NEWS. Miss Soule has a love for natural history and her endeavor to find out the distribution of the stemmed and stemless cocoon is most praiseworthy. She gives her experience with cocoons in Eastern New York, Massachusetts, New Hampshire and Vermont, and the pith of the whole matter is in the concluding paragraph on page 175 of vol. xvi. We are not greatly troubled by Dr. Dyar's remarks on "The condition of editorial responsibility," as the success of the NEWS shows. We publish in the NEWS what we think of interest to its readers, and the assumption that everything is new and that if it is not it is due to ignorance of the facts on the part of the editors is preposterous. We don't live on ice water. We were also aware that the life history of *Harrisimemna trisignata* had been studied by a number of entomologists, but as the article on that subject interested our readers and brought valuable comment we are also satisfied on that score. Our space is too valuable and limited to publish a bibliography with each article.—H. S.

T. Polyphemus COCOONS.—In answer to my question about the forms of *polyphemus* cocoons, I have had many interesting letters whose reports I give briefly.

From Massachusetts, Rhode Island, Connecticut and Vermont "no stems" were reported; "never heard of one with a stem" being added more than once.

Delaware, New York, and Pennsylvania report both forms, sometimes one given as predominating, sometimes the other.

One collector in New Jersey gives figures: out of 20,000 cocoons but 200 had stems.

Missouri has both forms according to two collectors; all stems, according to one, all stems except one specimen, according to another.

Indiana—all stems except one specimen

Ohio—all stems, "even when spun in a cage," one student writes.

From Canada a small percentage of stems is reported, and this form is thought, by two persons, to be made by diseased or parasitized larvæ in Canada.

Cocoons with stems, sent me from the West, gave superb moths, but two similar ones gave parasites, indicating that these have no connection with the form of cocoon.

Of course, these reports are not enough to justify any theory, and the reports from any state might be balanced by the experience of collectors who have not sent any information, so there is nothing final reached.

One interesting fact was given. A collector wrote that the form with stems was always found on maples on the streets of towns, while the stemless form was found in the woods, either on the ground or spun against the trunk or branch of a tree. The same difference was noted by two other persons, one of whom suggested that the suspension might be because in the streets the leaves on the ground were cleared away in the autumn.—CAROLINE GRAY SOULE.

STRATEGUS INJURING DATE-PALMS.—Professor R. H. Forbes recently sent me a fine male *Strategus julianus*, which he reported as eating roots of date palms in Arizona. I am indebted to Mr. Fall for assistance in determining the species. In Alabama, *S. anteus* has been reported to injure peach roots (*cf.* Bull. 22, Div. Ent., Dep. Agr., p. 105. —T. D. A. COCKERELL.

THE DISTRIBUTION OF *HELICONIUS CHARITONIUS* LINNÆUS IN THE UNITED STATES.—That this distinctly tropical butterfly has a wider range within the United States than has heretofore been assigned to it by authors has come to the knowledge of the writer. One of his valued correspondents, residing in Waco, Texas, informs him in a recent letter that he has captured three specimens of the insect at the latter place, and he is further informed by one of his assistants, who was long resident in Kansas, that he himself has seen several specimens in the possession of local collectors in Kansas, which were taken in the southern part of that State. That these specimens taken in Kansas are individuals which strayed northward is no doubt true, but that the insect occurs in considerable numbers as far north as central Texas is proved by recent observations. If occurring as far north as Kansas, it may also well occur, and undoubtedly does occur, in Louisiana, and possibly also as a straggler in Arkansas.—W. J. HOLLAND.

INSECT GALLS.—There has just come to hand a very useful and nicely-illustrated paper on the "Insect galls of Indiana," written by Dr. M. T. Cook (who is now in Cuba), and published by the Department of Geology and Natural Resources of Indiana. It is much to be hoped that this paper will stimulate interest in this rather neglected subject, which in Europe has such a large following that a journal is published, devoted exclusively to it. While we must confess that galls have received only a small fraction of the attention they deserve in this country, we must protest against the idea prevalent in some quarters that nothing has been done. On two different occasions, Dr. Bessey referred (in *Science*) to Dr. Cook's papers as if they constituted practically the first literature on galls in America. Even Dr. Cook himself, although he announces that he is working on a monograph of the insect-galls of North America, states that Coccid galls have only been reported from Australia, whereas they are known from the United States, Ceylon, South Africa, etc.

I notice that Dr. Cook retains the name *Pemphigus vagabundus* Walsh, for the gall on cottonwood usually known by this name. Oestlund (Aphididæ of Minnesota, 1887, p. 22) showed that this was not the true *vagabundus* of Walsh, but did not propose a new name. I propose that the *P. vagabundus* of Oestlund, described in the place cited, be known as *Pemphigus æstlundi*. It is found as far west as Colorado. Walsh's species is probably unrecognizable.—T. D. A. COCKERELL.

A FEATHERED worm has made its appearance in different parts of the State of North Carolina, and a number of people have been made very ill by its bite.

The insect is not unlike a white earth worm, but has a covering of brown down, similar to that of a young bird. Its bite is so poisonous that in a few seconds after receiving the wound the victim swells enormously and displays symptoms not unlike those of a snake bite.

The worm feeds on maple trees and rose bushes. Its presence on the latter accounts for the number of women victims. No one is able to classify the insect. Several specimens are being prepared for shipment to Washington for examination to establish its identity.—*New York Times*.

Doings of Societies.

The October meeting of the Newark Entomological Society was held on the 8th, with President Keller in the chair and 24 members present.

Messrs. J. Schmich, M. Schulze and B. Porter were proposed and elected to membership.

The following captures were reported :

Arctia rectilinea, by Mr. Wormsbacher.

Melanomma auricinctaria (Lep.) and *Catocala relictæ* at Newark, by Mr. Broadwell.

Mr. Buchholz exhibited a ♂ of *Argynnis idalia*, caught by himself at Plainfield, N. J., with primaries almost black; secondaries entirely black on top and marginal row of silvery spots underneath absent; submarginal row almost wanting and inner ones greatly reduced.

Semioophora janualis, *Agrotis geniculata*, *Porosagrotis murænule*, *Mamestra laudabilis* and *Acronycta tritona* at Lakehurst, N. J., were reported by Messrs. Keller and Buchholz.

After adjournment of the business meeting the 21st anniversary of the Society was celebrated; a good supper and refreshments were amply provided for by the committee in charge. The music was furnished by Professors Weidt and Wormsbacher and an all around good humor prevailed until the end.

The November meeting of the Newark Entomological Society was held on the 12th, with President Keller in the chair and 13 members present.

The officers' election resulted as follows: President, Mr.

Geo. J. Keller, re-elected ; Vice President, Mr. H. H. Brehme ; Secretary, Mr. Otto Buchholz, re-elected ; Treasurer, Mr. S. Seib, re-elected ; Librarian, Mr. Wm. Broadwell, re-elected ; Curator (Lep.), Mr. J. B. Angelman, re-elected ; Curator (Col.), Mr. E. A. Bischoff, re-elected.

Mr. Wasmuth exhibited some rare specimens of Lepidoptera ; among them were : *Sphinx franckii*, *Sphinx canadensis*, *Ellema coniferarum* (larvæ), *Papilio philenor wasmuthi*, ♀ of *Arctia nevadensis*, *Catocala elda* and a ♀ of *Argynnis nokomis*.

Mr. Buchholz had specimens of a new species of *Acronycta* caught at Elizabeth, N. J. OTTO BUCHHOLZ, *Secretary*.

Minutes of meeting of Brooklyn Entomological Society, held at the residence of Mr. George Franck, 1040 DeKalb avenue, Brooklyn, N. Y., on October 5, 1905. Eighteen persons present, the president in the chair. Mr. James Lever, of Brooklyn, was duly elected a member.

Prof. John B. Smith gave an outline of the work connected with the extermination of mosquitoes in Staten Island and the adjacent Long Island salt marshes, with photographs showing apparatus and localities. Investigation had proved that in the spring of 1905, *Culex sollicitans* did not breed in New Jersey, but did breed on Staten Island, from whence the insects had been traced in their flight to the Orange Mts. and thence to Madison and Morristown, N. J. It became essential therefore that action should be taken by the New York City authorities, who had accordingly, upon application, appropriated \$17,000, based on the report and estimate of Mr. Brehme, who had examined the conditions on the Island. This sum had been further reduced on advertised bids to \$15,500 and the work of eliminating mosquito breeding areas there was rapidly progressing. The Brooklyn City Railroad Company was also greatly aiding in the matter by removing ashes on specially constructed box cars, each car conveying four giant ash cans holding many tons of material, which, by means of cranes, was expeditiously dumped upon the Coney Island and Gravesend marshes, whereby, not only was the refuse promptly taken away, but much worthless meadow was being reclaimed and made val-

uable and incidentally the breeding places of mosquitoes were becoming greatly diminished.

Professor Smith further explained that the unusual freedom from mosquitoes which large sections of Long Island enjoyed the past summer was due to the lack of rain during the previous spring and the consequent drying up of pools and marshes to such an extent that subsequent showers proved insufficient to provide moisture enough for the development of the eggs and larvæ.

Mr. Wasmuth exhibited a fine series of *Apantesis oithona* and variation *rectilinea*, the latter heretofore recorded only from the Mississippi Valley, which he had found resting on grass stems in a field near Woodhaven, L. I., about May 15.

Mr. H. H. Newcomb, of Boston, being present, gave the Society much interesting information concerning the progress of things entomological and collections in that city.

ARCHIBALD C. WEEKS, *Secretary*.

A stated meeting of the Feldman Collecting Social, of Philadelphia, was held November 15, 1905, 11 members present.

Mr. Laurent exhibited specimens of *Erannis tiliaria* and *Euchlaena obtusaria*, taken at Mount Airy, Philadelphia. The first-named species was not in Mr. Laurent's list of Pennsylvania moths published some time ago.

Mr. Daecke stated that he had received a communication from Professor Hine in which he reports a typical specimen of *Chrysops amazon* from New Hampshire. Mr. Daecke also exhibited specimens of *Rhagoletis pomonella*, bred on huckleberry.

A few overripe huckleberries infested by small dipterous larvæ were collected at Da Costa, N. J., Aug. 16, 1904. The larvæ went into the ground to pupate. One imago emerged May 31st, 1905, and proved to be *Rhagoletis pomonella* Walsh, belonging to the family Trypetidæ. The larva is the well-known apple maggot.

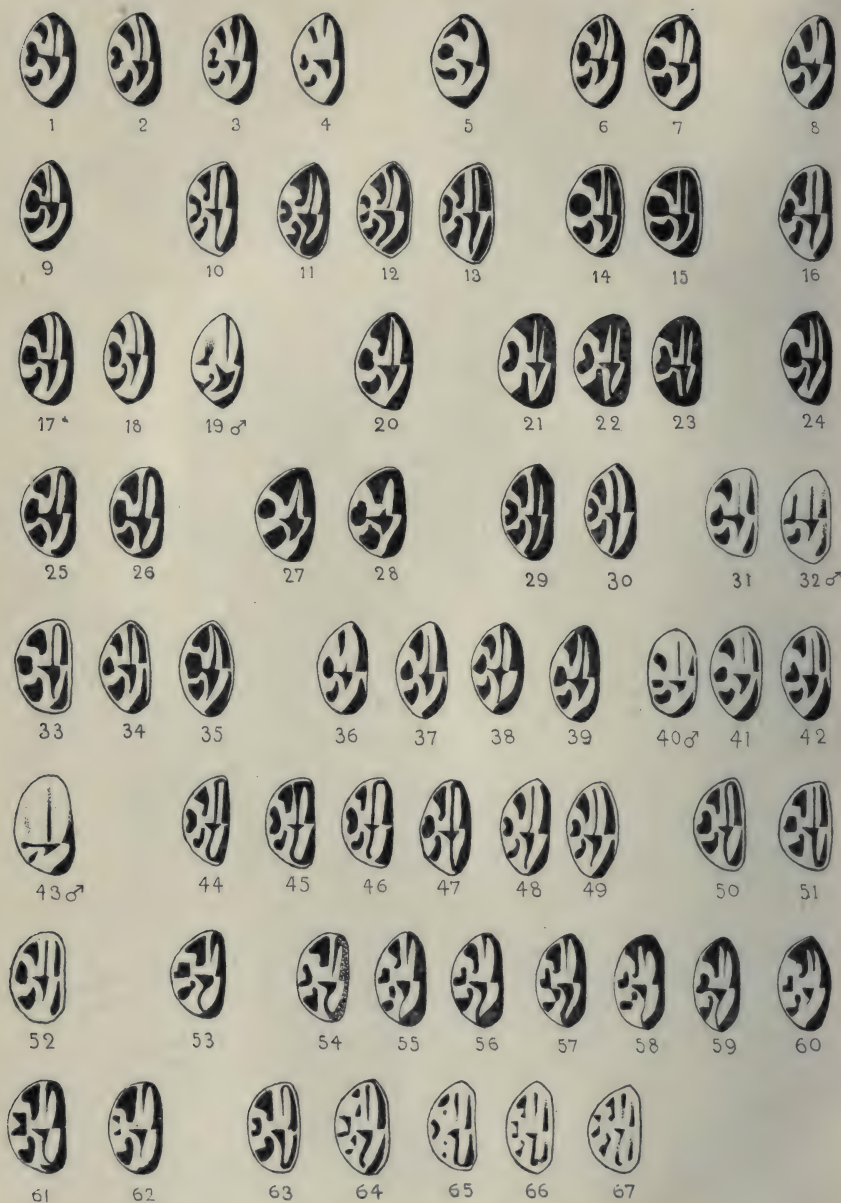
Mr. Wenzel exhibited the work of a Scolytid in roots of huckleberry. The species is *Corthylus punctatissimus*, taken by

Mr. Wenzel, Jr., on October 22nd, at Cape May Court House. This is the only subterranean Scolytid known.

Mr. H. W. Wenzel exhibited a collection of Coleoptera, made by H. Wenzel, Jr., on Tybee island, on the coast of Georgia, during the latter part of July, approximating 3,000 specimens. The collection contained a great number of very interesting species. Carabidae were rarely found on the ground. A species of *Gelasimus* (fiddler crab) is sole proprietor of all soil in the woods. In going over the collection the speaker dwelt on the following species: By beating trees, *Pterostichus submarginatus*, *Plochionus amandus*, and other Carabidae were found. Among the Histeridae a beautiful blue species near *Paromalus*—probably a new species. In the Elateridae several very interesting species—*Dendrocharis flavicornis*, *Stethon errans*, *Nematodes pavidus*; a species near *Monocrepidius*, unknown to the speaker, was found at night on the sand hills near the beach; this is a pale unicolorous insect. In Buprestidae—*Xenorhipes brendeli*, *Actenodes auronotatus* and other species. *Drapetes geminatus* and *D. rubricollis*. In Cleridae *Hydnocera aegra* and other species. Ptinidae—twenty species were taken, including several species recently described by Mr. Fall. In Scarabæidæ, a number of species, *Lachnosteria glaberrima* being common. Cerambycidae are represented by a number of species. *Lypsimena fuscata* in numbers showing a great difference in size. Chrysomelidae represented by a number of species. *Bruchus coryphæ* and *B. cruentatus*, the former a most beautiful species, in numbers. Tenebrionidae not numerous, *Platydema cyanescens*, a fine species was taken. Oedemeridae, Mordellidae and Anthici are represented, *Formicomus scitulus* a beautiful little species was found common with *Mecynotarsus candidus* and *Anthicus pallens*. The Curculionidae are well represented, especially *Conotrachelus* and allied genera, probably one or two new species. Scolytidae not numerous. Anthribidae are well represented.

A complete list of all species found on Tybee Island by Dr. Castle and Mr. Wenzel will be published in ENTOMOLOGICAL NEWS.

F. HAIMBACH, *Secretary*.



EYE MACULATIONS OF THE GENUS CHRYSOPS.

All figures are taken from females except those marked ♂.

- | | | | |
|----------------------------|--------------------------|-----------------------------|--------------------------|
| 1-4 <i>C. celer</i> | 16 <i>C. montanus</i> | 29-30 <i>C. bistellatus</i> | 50-51 <i>C. sequax</i> |
| 5 <i>C. fugax</i> | 17-19 <i>C. callidus</i> | 31-32 <i>C. moechus</i> | 52 <i>C. striatus</i> |
| 6-7 <i>C. niger</i> | 20 <i>C. delicatulus</i> | 33-35 <i>C. obsoletus</i> | 53 <i>C. cursim</i> |
| 8 <i>C. amazon</i> | 21-23 <i>C. dimmochi</i> | 36-39 <i>C. univittatus</i> | 54-60 <i>C. pudicus</i> |
| 9 <i>C. plangens</i> | 24 <i>C. indus</i> | 40-42 <i>C. fallax</i> | 61-62 <i>C. brunneus</i> |
| 10-13 <i>C. nigribimbo</i> | 25-26 <i>C. morosus</i> | 43 <i>C. morrens</i> | 63-67 <i>C. flavidus</i> |
| 14-15 <i>C. brimleyi</i> | 27-28 <i>C. hilaris</i> | 44-49 <i>C. vittatus</i> | |

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

FEBRUARY, 1906.

No. 2.

CONTENTS:

Daecke—On the Eye-Coloration of the Genus <i>Chrysops</i>	39	Smith—Some Notes on the Bee Genus <i>Caupolicana</i>	57
Wickham—The Races of <i>Cicindela tranquebarica</i> Hbst.....	43	Troop—A New Aphid.....	59
Coquillett—A New <i>Tabanus</i> Related to <i>punctifer</i>	48	Brues—A New Subapterous Encyrtid..	61
Howard—Prof. Berlese's Apparatus for Collecting Small Arthropods Rapidly and in Great Quantities.....	49	Kellogg—A Gigantic New Biting Bird-Louse.....	62
De la Torre Bueno—On Some Aquatic Hemiptera from Costa Rica, Central America.....	54	Wellman—Observations on the Bionomics of <i>Auchmeromyia luteola</i> Fab.	64
		Editorial.....	68
		Notes and News.....	69
		Doings of Societies.....	70

On the Eye-Coloration of the Genus *Chrysops*.

BY E. DAECKE.

(Plate 1.)

Little has been recorded on the eye-maculation of *Chrysops*, yet every student of this interesting genus, when in doubt of where to place a specimen will examine the eyes in order to obtain additional information to separate it from its allied forms.

Baron Osten-Sacken, in his *Prodrome*, Part 1, page 369, has briefly referred to this character.

The fact that the design disappears as soon as the insect is dried makes it inconvenient for study, and to relax the specimen, which will bring the image back again to some extent, is done at the risk of ruining it. This, combined with the fact that the design-variation in some species is so great as to run into and correspond with that of other species, likely has caused students to carefully avoid writing on this subject.

The vast design-variation in the species renders a synoptic

table of this genus by this character impossible, but enough matter of value remains that I deem it expedient to offer these remarks accompanied by the figures, and hope that it may stimulate to further research in this direction.

My observations were mainly made on the New Jersey species, though a few others, so far not recorded from New Jersey, have been figured.

The figures are taken from females except Nos. 19, 32, 40 and 43, which are marked ♂.

The design of the male eye necessarily differs from that of the female. The male eye being holoptic the design is longer and drawn toward the vertex. As a rule it is indistinct in the vertical region or fades away entirely, a reddish bronze lustre frequently taking its place. The upper spot near the frontal margin is seldom recognizable. The middle spot, generally present, rarely corresponds in shape with that of the female. It is generally elongated toward the vertex, in which direction it frequently loses its definite contour. In *C. callidus* the shape of lower frontal spot and its contiguity to the frontal margin (Fig. 19), in *C. moechus* the arrow-head (Fig. 32) betray the identity with their respective females. The male *fallax* resembles the female in its linear shaft which is disconnected from the arrow-head and occipital border (Fig. 40). On account of their scarcity the eyes of males of only a few species have been studied.

The normal eye of *Chrysops* consists of six purple spots on a green ground-color.

1. The occipital border, generally indentated in the middle, along the occipital margin.

2. The arrow-head, in front of the indentation of the occipital border, pointing downward.

3. The shaft, either attached to or disconnected from the arrow-head, upwards.

4. The upper frontal spot	} along the frontal margin.
5. The middle frontal spot	
6. The lower frontal spot	

It does not matter what shape these spots assume or in what manner they combine with each other, these six spots

can always be recognized by their relative positions. There may be two, three, four, five or all connected with each other, thus it will happen that in *C. dimmocki* and *C. indus* all spots are connected in some way. Again there may be as many as ten spots (*C. flavidus*), but it will be readily seen that this greater number is caused by the subdivision of some of the above-named maculations.

The arrow-head and middle spot either coalesce or are separated in the same species (see *celer*, *niger*, *callidus*, *dimmocki*). The same may be said of arrow-head and occipital border below (*nigribimbo*, *dimmocki*, *flavidus*, etc.) The coalescence of upper spot, shaft and occipital border near vertex is equally unreliable as a distinguishing character (*univittatus*, *pudicus*) but the connection and separation of border and occipital margin appear to be singularly permanent; thus in all specimens examined of *flavidus* the occipital border is separated from the margin, while in *brunneus*, a closely allied species to *flavidus*, it is united to it. (Fig. 61 is taken from a New Jersey specimen, Fig. 62 from a specimen from Ohio).

The eye of *pudicus* resembles that of *brunneus*, here the border also joins the occipital margin, but the middle spot is distinctly different from that of *brunneus*. See figure.

The eyes of *pudicus* and *cursim* seem to be identical in maculation. Not enough specimens of *cursim* were procurable to enable me to come to a definite conclusion.

In *brunneus*, *flavidus*, *pudicus* and *cursim* the shaft is always disconnected from arrow-head.

Vittatus has its border joining the occipital margin; in one case only it was found to be partly separated.

All specimens examined of *striatus* and *sequax* had the border separated from the occipital margin.

Niger and *brimleyi* are closely allied species and also have a strong resemblance in their eye-maculation. In *brimleyi*, however, the maculation is very much heavier, the border does not join the occipital margin as it does in *niger*.

This latter character is variable in *nigribimbo*.

Fugax closely resembles *celer*, but can at once be separated from the latter by the absence of shaft. Fig. 5 answers very

well for all specimens examined of *fugax*. Nos. 1 and 2 are the rule, Nos. 3 and 4 the exceptions of *celer*.

About fifty specimens of *plangens* were examined and Fig. 9 suffices for all of them.

The eye of *amazon* resembles that of *celer* but the shaft of *amazon* is curiously divided in the middle, the upper part connected with occipital border, the lower part with arrow-head.

In *fallax* the shaft is generally free, that is, neither connected above or below; in rare cases it is connected with arrow-head. In this species the occipital border is subdivided in the middle, the lower portion of border partly coalesces with occipital margin.

Callidus, *dimmocki* and *indus* are the only New Jersey species in which the upper and lower frontal spots coalesce with frontal margin. The pattern of *dimmocki* is generally very heavy, the green background often reduced to fine lines surrounded by the purple maculation. The design of *callidus* corresponds at times with that of *indus*, but as a rule the lower frontal spot of *callidus* has a tendency to terminate scroll-shaped, which has not been observed in *indus*.

The two figures of *bistellatus* show the extreme range of maculation of all the known specimens.

Delicatulus has often been mistaken for a light and small form of *callidus*; the eye, however, shows decided differences. The upper and lower frontal spots of *delicatulus* are not connected with the frontal margin, the upper spot merges into the occipital border, crowding out the shaft which, at this juncture, is usually disconnected.

Hilaris, which has so far not been recorded from New Jersey, is the only other species thus far examined in which the upper spot joins the occipital border without allowing the shaft its respectively intermediate position, the shaft frequently being abbreviated.

This paper represents the result of only one summer's observations, and there is no doubt that many other variations of the species figured will be found. It remains to be seen to what an extent the widely distributed species will show design-variation from those that have been studied.

The Races of *Cicindela tranquebarica* Hbst.

By H. F. WICKHAM, Iowa City, Iowa.

Almost every writer who has had occasion to treat of *Cicindela tranquebarica* Hbst. (*C. vulgaris* Say), makes some mention of the extraordinary range of variation exhibited. Nor need we wonder at this variation, when we consider for a moment the vast extent of country inhabited by *tranquebarica* in some of its many forms. From the lowlands of the Gulf States, Mississippi, Georgia and Louisiana, it reaches northward through the Carolinas to Upper Canada and the maritime provinces. It occupies practically the entire region drained by the Mississippi River and its tributaries, from the Alleghenies to the Rocky Mountains, extending far into the British possessions of Manitoba and Alberta. On the great interior plateau between the Wasatch and the Sierra Nevada, it runs and flies along the scanty streams, or hunts its prey on the bitter flats of the alkaline lakes. To the south the Rio Grande basin is also invaded, and the western outposts, split more or less into beautiful local races, occupy the vales and mountains of the Pacific Coast.

In spite of the differences in size, color and hairiness exhibited by specimens from different parts of the country, it is no easy matter to settle upon characters whereby the races may be accurately defined. In some districts a form may occur which, within a limited area, seems to be definable by features of constancy and apparent importance—and we are tempted into describing it as a new race or subspecies. But in another locality, we find these characters utterly unstable and consequently have to abandon them as bases of subspecific separation, unless we make the citation of a locality label the most important part of our diagnosis.

The separation of the species into "varieties" by Mr. Leng, in his recent "revision" is to my mind, open to certain objections. Some of the characters used are shown by sufficient material to be entirely ephemeral and not confined to specimens from any special district. In one case, I believe, he has

been misled by wrong interpretation of the meaning of an earlier writer. I am also at loss to understand why he sinks *tranquebarica* Hbst. as a synonym, giving precedence to the much later name *vulgaris* Say. If we are satisfied that the name *tranquebarica* was applied by Herbst to this species, the fact of the habitat being wrongly attributed is, under present laws of nomenclature, no valid excuse for its rejection.

It is not my intention to propose new names for any of the numerous local forms, readily enough separable by an experienced eye, though possessing no positive definitive characters; but rather to call attention to some of the districts over which these imperfectly differentiated forms are distributed and the manner in which they again subdivide and intergrade. In general it may be said that the following rules hold good with the aggregate known as *C. tranquebarica* (or *vulgaris*) and its varieties, race or subspecies. Exceptions occur, of course.

1. The specimens from the extreme southeastern portion of the range are small and nearly dead blackish, with scarcely any trace of cupreous on the upper side. A series from North Carolina (given me by Mr. Edw. D. Harris) and from Mississippi, runs only about .50 inch in length. The markings in this form are narrow, the humeral lunule shorter and more transverse than usual.

2. In the upper Mississippi valley, the Middle States, New England and Canada, occurs a larger form, with the upper surface obscurely bronzed or nearly black, the markings broader and better developed, the humeral lunule longer and less transverse. In size the average is about .60 inch. This is presumably the type described as *vulgaris* by Say, and is so called by Mr. Leng.

3. In the more northerly portion of this range, is found occasionally a form more bronzed and a little hairier, called by Mr. Leng, *C. horiconensis*. This name, I think unnecessary, the abberation being illy defined and not a geographical race in the true sense of the word, occurring side by side with the blackish specimens. It also passes insensibly into the next, and I should follow Dr. W. Horn in relegating it to synonymy.

4. In the arid and semi-arid regions of the middle west, from New Mexico through Colorado, eastern Montana, Kansas, Nebraska, Dakota, Manitoba, Assiniboia and Alberta, we find a better marked race of (usually) rather distinctly metallic upper surface, with broad markings, the humeral lunule complete and the middle band frequently expanded on the margin. This is *obliquata* Kirby, and is so recognized by Mr. Leng. It is, however, not very well differentiated, a great number of the specimens being about equally well referable to *obliquata* or to *horiconensis*. Others run into *vibex*. Dr. Horn sinks it as a synonym, and I am disposed to agree with him in this course, recognizing, however, that *obliquata* is much more worthy of being retained than is *horiconensis*. The extreme specimens are very different-looking from the eastern *tranquebarica*.

5. In specimens from the western edge of the ordinary range of the above form, we find a well-marked tendency to partial obliteration of the humeral lunule. As a rule, this is accompanied by a preponderance of the greenish cast in the coloring of the upper surface, until in some portions of the Pacific district and the adjacent interior basin the coppery color is almost entirely replaced by a brilliant green. These green forms have thus been classified by Mr. Leng, in his Revision :

Bright green, humeral lunule broken . . .	<i>vibex</i> Horn.
Brilliant blue-green, humeral lunule lacking . .	<i>sierra</i> Leng.
Dull green, humeral lunule broken . . .	<i>roguensis</i> Harris.

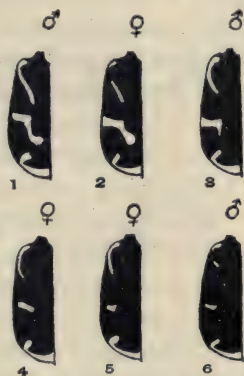
All of these forms are well represented in the material before me, but I do not agree with Mr. Leng in his assignment of names. The types of Mr. Harris' *C. roguensis* were from a locality distant but fifty or sixty miles from that of the type of *vibex* and some specimens of the first named (in my collection) from the Rogue River might well be called rather bright green, though in general they are somewhat dull. I think the name *roguensis* should sink as a true synonym of *vibex*, the distinction being merely the evanescent one of depth or brilliance in color. In fact, so I am told by Dr. Walther Horn, the type of *vibex* is not of the brilliant green of the San Bernardino Co.

(California) specimens, which have been doing duty as *vibex*, but of a duller shade. He writes me of an interesting fact in this connection, of which I was altogether ignorant, namely, that in southern California *vibex* is dimorphic, apparently according to season. He says that the bright green form occurs from May to October, the dull form in April. The explanation, he suggests, may be sought in the effects of the winter rains upon the development of the early spring form. It is worth mentioning that the bright southern Californian specimens are much more brilliant than any of those from Oregon.

C. sierra Leng, the remaining described green form, occurring in the Sierra Nevada, may stand for the time as a fairly well-marked subspecies. It is a mountain race with much reduced markings, but this feature in itself is of little value, as will appear shortly.

Several weeks ago, I received from Mr. Knaus a pair of a bright green species of *Cicindela* taken near Las Vegas, Nevada, by Mr. Tom Spalding. They were of rather smaller size than the average *vibex* (measuring .52 inch), with short humeral lunule, middle band minus the deflexed portion, apical lunule complete. Misled by the general appearance, I at first took them for representatives of a new form of the *repanda* group, but subsequent examination of the labrum and vestiture showed them to belong to the *tranquebarica* series. A request for more specimens brought two others from Mr. Knaus and two from Mr. Spalding, the six representing his whole catch. The remarkable feature of this little collection is that no two of the individuals are alike, but they exhibit among themselves various modifications of pattern from full development to almost the reduced style of *sierra*. The figures annexed will show the gradation. With only 4, 5 and 6, at hand, I should probably have separated a new "race" to be characterized by the small size and the loss of the *tip* of the humeral lunule (a rare feature in the *tranquebarica* aggregate) but the examination of the others induced me to refrain from adding another name. I consider these specimens as belonging to a plastic local race, closely related to the brilliant southern Californian *vibex* (*aut. post.*), showing the intimate relations

of the green races and their probable late development. It will be noticed by those who have plenty of material, that the bright green San Bernardino specimens tend to complete markings, without the interruption of the humeral lunule that should really characterize *vibex*. The discovery of a variable green form in the Great Basin is of much interest, the remarkable influence upon the beetles colonized within its limits having already been touched upon elsewhere. The small lakes, now rapidly drying up, evidently obtained their littoral faunæ from some common source, as I have shown.* Minor modifications of color and pattern, resulting in the formation of more or less important local races are commonly noticed among the faunæ of the various lake shores and *Cicindela tranquebarica* is, in this respect, no exception.



The type of this species found most abundantly in the Great Basin is the form *obliquata* in some of its manifestations—that is to say, a rather widely marked insect of large size, more or less metallic above. There is, however, in Utah specimens, a strong tendency to disappearance of the sub-basal portion of the humeral lunule and the marginal part of the median band, producing an elytral pattern like that of typical *vibex*. Several of my specimens from Provo are almost identical in this respect with others from British Columbia, sent me by Mr. Harris. At Great Salt Lake, Sevier Lake and Humboldt Lake, there seems to be a larger proportion of blackish, almost non-metallic specimens (the ground color of the upper surface being referred to) with moderately wide complete patterns, while at Bridgeport, California (still within the Basin), occurs a form almost dead black above, fully and widely marked, very different in appearance from those of the more eastern portions of the Basin.

I have not seen *C. plutonica* Casey, which is classed by Dr.

*American Naturalist, Sept., 1904. Report Entom. Soc. Ontario, 1904.

W. Horn as a subspecies of *tranquebarica*. It is described from Placer Co., California, and is reported by Mr. Leng as occurring also in Oregon. Accepting Dr. Horn's dictum in regard to the position of this form, my suggested arrangement of the *tranquebarica* series would be as follows :

Cicindela tranquebarica Herbst.

Syn.—*vulgaris* Say, *obliquata* Dej., Kby., *kirbyi* Lec.,
horiconensis Leng.

Subsp.—*vibex* Horn.

Syn.—*roguensis* Harris.

Aber.—*vibex* aut. post.

Subsp.—*sierra* Leng.

Subsp.—*plutonica* Casey.

From what has been written concerning the various geographical races and local forms, it will be noticed at once that the species as a whole is more homogeneous in the northern parts of the range, while to the south it tends to split into many imperfectly differentiated assemblages of less than specific value. A nice problem is offered to some student who will undertake to work out the details of probable origin and diffusion of the many types of *Cicindela* in North America.

A New *Tabanus* Related to *punctifer*.

By D. W. COQUILLET.

Tabanus subniger n. sp.—Near *punctifer* but larger, base of front tibiae not whitish, abdomen with white hairs along the sides and apex, etc. Black, with a tinge of brown, the mesonotum and scutellum brownish yellow, gray pruinose and covered with white hairs ; elsewhere the hairs are chiefly black except along the sides and apex of the abdomen where there are many white ones which become more numerous posteriorly ; front calypteres also fringed with white hairs. Front very broad above the subcallus with parallel sides, this portion being about two and a half times as long as wide, subcallus opaque, grayish pruinose, callus polished, transversely oval and with an indistinct, linear prolongation above. Eyes bare. Wings gray ; costal cell and stigma pale brown, a brown cloud at base of second submarginal and of the posterior cells. Length, 25 mm.

Lake Forest, Illinois. A female collected March 27, 1904, by Dr. J. G. Needham. Type No. 8301, U. S. Nat. Mus.

Professor Berlese's Apparatus For Collecting Small Arthropods Rapidly and in Great Quantities.

By L. O. HOWARD.

While visiting the laboratory of Professor Antonio Berlese in Florence in June last, I was greatly interested in an apparatus which he has prepared for collecting small insects and other arthropods very rapidly and in very great numbers, and which it seemed to me obviated in large measure the laborious process known to entomologists as "sifting." He showed me the apparatus practically in operation, and showed me further large numbers of vials filled with Thysanura, Myriapoda, Acarina and the like, which in number and variety afforded a perfect revelation to me. Since returning to this country I have had one of the smaller styles of the apparatus made, and have tested it during the month of December with leaves and rubbish collected on the grounds of the Department of Agriculture and with very considerable success; so much so, in fact, that I wish to bring the apparatus to the attention of English-speaking entomologists. No doubt had I used leaves or top soil of old and long undisturbed wooded regions the results achieved would have been vastly greater than they have with the material tested; but even this, as just stated, has been very satisfactory. Professor Berlese's description and statement concerning results was published in *Redia*, vol. II, No. 1, shortly after my visit, and his article, very freely translated, is as follows:

Within this last year I have devised an apparatus which is very simple and very effective, with which I collect in great numbers and without fatigue, the small Arthropods as well as insects of all the following orders: Myriapoda, Symphyla, Pauropoda, Chelifera and Arachnida, and especially Acarida however small, without any danger of being able to escape. Of the Collembola, which are so difficult to collect because they spring, I have taken a very great number.

All those living creatures which are found to be present in the mosses, among the dead leaves under the trees, in decaying wood, in humus, in decomposing substances, etc., are col-

lected in a tube containing alcohol, which is attached to the apparatus under discussion, and on the part of the naturalist there is no further trouble than to separate them and study them. The apparatus consists of a large funnel which slides into a glass tube containing alcohol and this funnel is surrounded by water heated to 60° to 100° . On top of the funnel there is placed a sort of square tray of metallic network (a sieve) upon which is placed the material to be examined, and this material should naturally be sufficiently humid to restrain the living insects from escaping. Whether

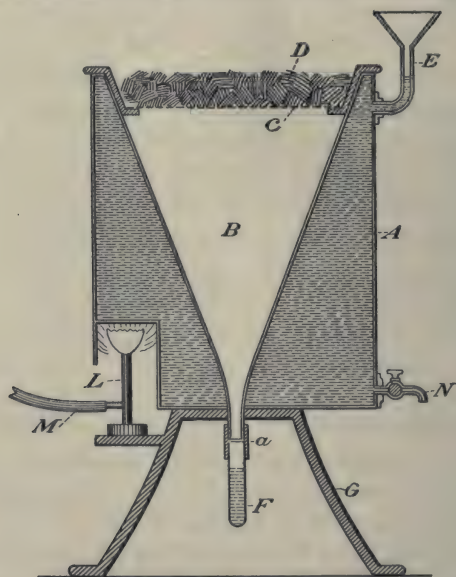


FIG. 1.—Apparatus for direct heating: *A*, exterior receptacle containing water; *B*, interior funnel; *C*, vessel having the bottom of metallic net work; *D*, substance for examination; *E*, funnel for introducing the water; *F*, small glass tube containing alcohol, where the insects are collected, this being connected to the apex of the funnel by a short tube (*a*) of India rubber; *G*, feet supporting the apparatus; *L*, lamp for heating; *M*, India rubber tube for carrying off the gas; *N*, faucet for discharge.

the material in the tray, passing gradually (although rapidly enough) through and losing some of its moisture causes the insects to fall to the bottom, or whether these are attracted by the heat beneath, it is certain that they all try to reach the metallic net and there they pass through, falling into the metallic funnel.

But the walls of the funnel, thanks to the water surrounding them, are so warm that the insects cannot remain, and they fall, rolling downward until they enter the tube containing alcohol, in which only a very small quantity of detritus is collected.

It is necessary, however, not to shake or stir the apparatus or the material during this operation, to avoid the falling of too much detritus together with the insects.

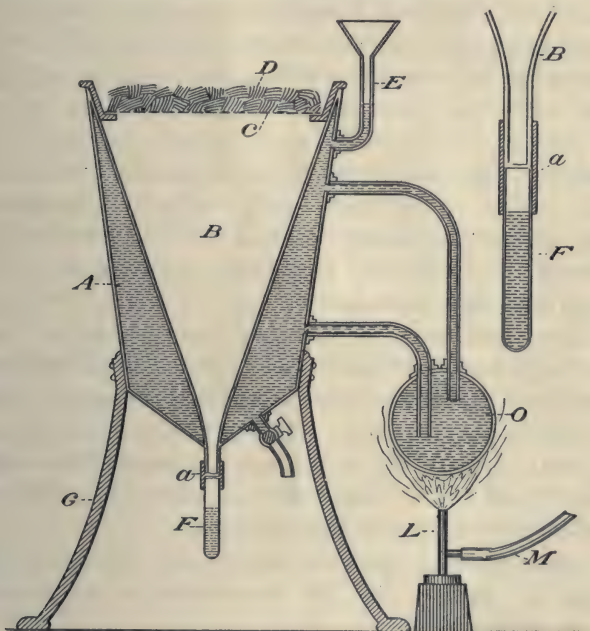


FIG. 2.—Apparatus for indirect heating by means of the boiler (*o*): In the figure at the right we see the manner of inserting the glass tube containing the alcohol into the apex of the funnel, that is by means of a ring or *very short tube of India rubber* (*a*).

The figures, which show two styles of such apparatus, represent in one case (Fig. 1) the heating by direct application, and in the other case (Fig. 2), by means of a species of boiler, always using a Bunsen or an alcohol lamp by which to maintain a high temperature in the water for a long time. As for the rest, any one can vary the construction of the apparatus as he may think best, granting that the walls of the funnel be always much inclined, at least 60 degrees. The diameter of

the funnel should be about a half metre, and the tray itself should be movable in order that it may be refilled with the material when separated from the funnel.

I have used to great advantage a small apparatus of this style (the funnel being only 30 centimetres in diameter) during the last year, and have thus discovered several new species of Italian Acarida, illustrated in this journal, while I have collected an enormous quantity of other small arthropods, especially of Collembola, Symphyla, Pauropoda, etc. (Fig. 1).

These, especially the Collembola, and also the Thysanura all remain on the surface of the alcohol, not becoming submerged, while the other insects all fall to the bottom of the tube.

Thus, it is easy to collect the said Collembola with a brush, from the surface of the alcohol without further disturbance.

After the excellent results secured from the small apparatus referred to, I had another, much larger, constructed which has been operated since November.

It is composed of a case of wood, the interior of which is covered with lead, and has a capacity of six hectolitres, and contains four large funnels in square sections the sides of which are 50 centimetres. Thus I have an extent of one square metre upon which to arrange the material for examination, and I can place four different kinds of material from four different localities on these sieves.

The water is about three hectolitres and is kept at 60° or 70°, and for some hours the temperature is maintained by means of a large gas heater.

This heater which serves me well also for heating the room in which it is placed, consumes about three cubic metres of gas per day, which proves that with an expense of about one lira, I daily obtain without any trouble, a greater number of small insects than ten persons with all the fatigue and patience possible, would be able to collect in the same length of time, and besides, I have the assurance that scarcely an individual insect has escaped. (Fig. 2).

Material to be examined.—Mosses, fallen and decayed leaves, humus, soil under stones, etc., are very rich in various forms

of insect life at all seasons of the year, and this material is treated very easily and with complete success in the apparatus described.

Manure.—The manures, especially from the stable, harbor great numbers of various arthropods which are not easy to collect because of the rapidity with which they escape, and also because the material itself is frequently anything but pleasant to examine.

Instead, with the apparatus, one is certain to secure all the arthropods hidden in the manure, since by their voluntarily seeking the heat, they fall continually into the tube in great numbers.

Myrmecophilous Arthropods.—Everything is caught, even including the ants, by putting upon the sieve some of the earth and detritus from the ant-hills.

Bark from trees.—The effect is marvelous which is obtained by treating the bark from various large trees, in this apparatus.

Under the bark there are found a great variety of insects which hibernate, either in a state of maturity or as larvæ. All these fall into the tube of alcohol almost entirely free from detritus of any sort, so that it is easy to quickly recognize the fauna thus sheltered during the winter by a given tree or a given species of plant.

Green parts of the plants.—In summer, better than in winter, the insects which live upon the foliage can be collected, however minute, by placing this, when fresh and just gathered, upon the sieve of the apparatus.

Parasites of the Vertebrata.—The host being dead and left cold for a few hours (bird or mammal), is then placed upon this apparatus and rapidly loses its exterior parasites (Pulicidæ, Anoplura and Pediculidæ, Acarida, etc.), which being attracted by the artificial heat, abandon the host hastily and fall into the tube containing alcohol.

These researches, otherwise so troublesome and difficult under ordinary methods, are, by this apparatus, effected automatically and with absolute results.

In many other special cases I have obtained extremely useful results from the employment of the described apparatus which I recommend to naturalists.

On Some Aquatic Hemiptera From Costa Rica, Central America.

BY J. R. DE LA TORRE BUENO.

It has been my good fortune to become acquainted in the past year, through correspondence, with Professor Paul Biolley, of San Jose de Costa Rica, who has sent me from time to time whatever he has collected for me in aquatic Hemiptera, principally in the Cryptocerata. In this period I have received from him a number of the bugs noted by Champion as from that country and some others not heretofore recorded from that region. They are as follows:

1. **Acanthia sulcicollis** Champion.

One specimen from La Palma, taken in April at an altitude of 1,600 meters. This species is not recorded from Costa Rica in Biologia Centrali-Americana, although it occurs in Guatemala and Panama.

2. **Gelastocoris bufo** Herrich-Schaeffer.

Found abundant on the shores of the Rio Surubres, near San Mateo, at an altitude of 250 meters, on the Pacific side of Costa Rica, in company with the two following species:

3. **Gelastocoris vicinus** Champion.

Rio Surubres near San Mateo.

4. **Gelastocoris** sp. near **vicinus** Champion.

Rio Surubres near San Mateo.

In the present uncertain condition of the specific differences in the Gelastocoridae it is difficult to pronounce on any distribution, which may or may not be real.

5. **Mononyx fuscipes** Guerin.

One specimen only, taken in the Reventazon Plain, near Santa Clara, on the Atlantic slope. This individual was found in a rotten log in December, 1904. It is an extremely widespread form throughout North and Central America.

6. **Mononyx nepaeformis** Fabricius.

One specimen taken at the same time as the *Gelastocoris* under a stone at the edge of the Rio Surubres, in February. This species extends from Mexico south to the Argentine Republic.

7. ***Limnocoris stali*** Montandon.

Rio Surubres near San Mateo, one specimen only in February. According to Champion, this species is found in Guatemala, Colombia, Venezuela and Bolivia.

8. ***Amorgius colossicum*** Stal.

Taken at electric light at San Jose, from which locality it is also recorded by Champion.

9. ***Amorgius annulipes*** Herrich-Schaeffer.

Taken at San Jose at various times, under electric lights. This species is recorded from as far north as California, and is said to be found in Brazil.

10. ***Abedus signoreti*** Mayr.

I have received long series of these from Rio Maria Aguilar near San Jose, where it was found in muddy pools, at an elevation of 1,160 metres, in May; from Vista del Mar, on the Pacific slope, at an elevation of 1,400 metres, in March, and from San Jose in January. These are new localities for Costa Rica.

11. ***Belostoma fusciventris*** Stal.

An abundant form near San Jose, which is the first Costa Rican record for this bug. Heretofore, it has been noted only as far south as Honduras.

12. ***Belostoma micantula*** Stal.

Two specimens of this pigmy form were taken in the Rio Surubres in February. It extends from Guatemala to the Argentine Republic.

13. ***Notonecta mexicana*** Amyot and Serville.

This has come from the Rio Maria Aguilar in January; taken at Vista del Mar in March and in La Palma in April. Both forms, var. *ceres* and var. *hades* Kirk. are represented. The types of the varieties are also from this region and collected by Prof. Biolley.

14. ***Buenoa crassipes*** Champion.

One specimen from Vista del Mar in March. This form is recorded by Champion from three localities in Guatemala only.

15. **Buenoa pallipes** (Fabricius) Champion.

I have received a long series taken in the Rio Maria Aguilar in January. In *Biologia Centrali-Americana* it is given from Vera Cruz in Mexico to Darien in Panama. This is now recorded for the first time from Costa Rica.

16. **Buenoa carinatus** Champion.

One example from San Jose. This does not attain the smallest dimensions given by Champion for his species, but in other respects it answers to the description. It is not recorded from further south than Guatemala and Honduras.

17. **Rhagovelia crassipes** Champion.

There is in this lot of insects a female from Vista del Mar, taken in March, which is the first record for Costa Rica. The types were from Panama, where they were found in plenty in two localities.

18. **Rhagovelia armata** Burmeister.

Two females were received from San Jose. Champion records it from Mexico, *vide* Burmeister and Signoret, but evidently did not possess it himself.

19. **Rhagovelia spinigera** Champion.

A long series of this form came to hand from Rio Maria Aguilar in January and San Jose in August. This species was described by Champion from one female example taken in Guatemala. Consequently, this is the first record outside of the published locality.

20. **Microvelia** n. sp.?

This is apparently an undescribed form, of which numbers were taken at San Jose in January.

21. **Gerris cariniventris** Champion.

A good number of this species, both winged males and females and one apterous female were taken at Rio Maria Aguilar in January and May. This is apparently common and numerous from Mexico down.

22. **Gerris (tenagogonus) opaca** Champion.

Two specimens from the Rio Surubres in February. Recorded by Champion as plentiful in Bugaba, Panama, the type locality. Both this and the following are listed under the generic synonym *Limnometra*.

23. **Gerris (tenagogonus) quadrilineata** Champion.

Three or four specimens from Rio Maria Aguilar in January and May. The distribution given in *Biologia Centrali-Americana* is rather disconnected. This is the first record from Costa Rica.

24. **Potamobates unidentatus** Champion.

One macropterous and two apterous individuals, male and female, from Rio Surubres. Recorded by Champion only from Bugaba, Panama.

Some Notes on the Bee Genus *Caupolicana*.

BY HARRY S. SMITH, Lincoln, Nebr.

Caupolicana albicollis n. sp.—♂. Length 19–21 mm. Black; head, with exception of the vertex, covered with a long, dense, whitish pubescence, that on the face very slightly ochraceous, that on the occiput snow-white; labrum and mandibles dark rufous, sometimes black, the latter with a dense fringe of long whitish hairs on the lower side; clypeus finely and irregularly punctured except the apex, which is impunctate and narrowly margined; antennæ black, grayish brown beneath; second joint of flagellum longer than style and almost half as long as the remaining portion of the flagellum; malar space short, about one-fourth as long as wide. Thorax finely and closely punctured, mesonotum, as far back as the tegulæ, covered with a short but dense erect whitish pubescence, very slightly tinged with ochraceous; the remaining portion of the thorax black, the hairs on the scutellum and post-scutellum much longer than those on the mesonotum. Abdomen black, opaque, minutely indistinctly punctured; first dorsal segment covered with a long sooty black pubescence like that of the scutellum, 2-4 almost bare excepting their apices, 6 and apex of 5 with long black hairs; segments 2-4 with broad silvery fasciæ, that on 2 sometimes slightly narrowed on the disk; ventral segments 2-4 clothed with long white pubescence, the segments with black hairs. Coxæ usually with a few long white hairs; femora and tibiæ black, with black pubescence; tarsi ferruginous, covered with a fine short fulvous pubescence, metatarsus black with inner side brownish. Wings smoky hyaline, slightly iridescent, veins and tegulæ brownish black; first and second recurrent nervures confluent with first and third cubital nervures. Length of wing 12–14 mm.

♀.—Similar to ♂, but differs in having the venter black, and in having somewhat broader fasciæ; a short dense black scopa on the posterior legs, metatarsus twice as wide as in ♂. The distance between the eyes at vertex is also about twice that of the ♂.

1 ♀ and 3 ♂ specimens, Mendoza and Bahia Blanca, Argentina (L. Bruner). Collection University of Nebraska.

In the coloration and markings of the head and mesothorax this species resembles *C. lugubris* F. Smith, but differs in having all the femora entirely black and in its greater size.

***Caupolicana fulvicollis* Spinola.**

The ♂ of this species, besides the usual sexual characters, differs from the ♀ in having a white fascia on the fifth dorsal segment, and in having the first four ventral segments clothed with long thin silvery white hairs. In both sexes the pubescence on the first dorsal segment varies from pale fulvous to grayish white, and in no case are the tibiae and tarsi clothed with black pubescence as in *C. gayi* Spinola, but are bright fulvous, the tibiae sometimes with a few white hairs on the inner side. The intermediate and posterior femora are usually white, but the anterior femora are concolorous with the thorax.

Dr. H. Friese, in his monograph of the genus in 1898, expresses some doubt as to whether this form is entitled to specific rank, and thinks that it may be a variety of *C. gayi* Spinola. The ♂ was unknown to him, and differs from Friese's description of the ♂ of the *C. gayi* in having a white fascia on the fifth dorsal segment. This, with other minor characters, such as color of pubescence on legs, etc., is sufficiently characteristic to make it distinct.

5 ♂ and 4 ♀ specimens, Cacarana, Argentina (L. Bruner). Collection University of Nebraska.

***Caupolicana nigriventris* Friese.**

One ♂ specimen I have identified as this species, but the white fasciae on the third and fourth segments are wanting on the disc, showing only on the posterior corners of the segments. Probably worn off.

Bahia Blanca, Argentina (L. Bruner). Collection University of Nebraska.

***Caupolicana albiventris* Friese.**

A single ♂ specimen which agrees with Dr. Friese's description in every particular.

Arequipa, Peru, Oct. 28th, 1898 (A. G. Weeks). Collection University of Nebr.

A New Aphid.

BY JAMES TROOP.

Aphis houghtonensis n. sp.

During the summer of 1904 plant lice were discovered to be very abundant in a field of Houghton gooseberries, near the city of Indianapolis. The peculiar manner in which they worked attracted attention, and specimens were taken and sent to Dr. L. O. Howard, at Washington, who pronounced it a new species. Drawings were accordingly made by Mr. Heidemann of the Division of Entomology.



FIG. 1.

In the field of gooseberries mentioned, there were scattering plants of another variety and it was noticed that none of these plants were infested by the *Aphis*. I then made several attempts during the summer of 1904 and also 1905 to colonize them on various other varieties of gooseberry, but in no case did I succeed in inducing them to feed. They multiplied so rapidly, however, upon the Houghton, that the owner was obliged to give up the fight, after two seasons' experience,

and destroy the entire five acres of plants. Hence I have designated it as *Aphis houghtonensis*. Fig. 1 shows the peculiar manner in which it crumples the leaves.

Description.—The wingless females of the summer broods are about one-sixteenth of an inch in length, of a pale green color, and somewhat hairy; eyes prominent; antennæ and legs of a yellowish tint and covered with scattering short spines, except the terminal joint of the antennæ. Antennæ a little more than half the length of the body; honey tubes prominent, nearly as long as from their base to the



FIG. 2.



FIG. 3.

tip of the abdomen (Fig. 2). The winged forms measure nearly three-sixteenths of an inch to the tips of the wings when folded. Color of the wings and body a shade darker than the wingless forms; antennæ nearly one-half longer than the body; spread of wings three times the length of the body; eyes somewhat darker than the wingless form, while the legs are not as spiny; honey tubes about the same length in both forms. (Fig. 3).

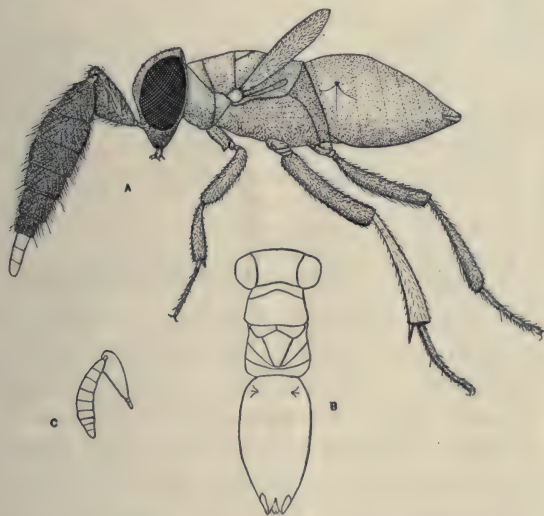
A New Subapterous Encyrtid.

BY CHARLES T. BRUES.

In 1900* Ashmead described as *Anusia neomexicana* the first species of this genus known to occur in North America. At this time I have the pleasure of describing both sexes of a second North American species from Central Texas.

Anusia xerophila sp. nov.

Male.—Length, 1.2 mm. Yellowish ferruginous, legs more yellowish, middle tibiae white. Antennae black, except the scape above which is brown, and the apical three joints, which are snow-white. Head slightly rostriform. Mandibles dark at tips, palpi pale, last joint piceous; lower part of front between the antennae slightly elevated but not carinate; above finely shagreened, the ocelli forming an equilateral triangle, the lateral pair nearly as far from the eye as from each other. Antennae 11-jointed, large and conspicuous, the scape obovoid, flattened, near



the tip as wide as the eye and longer; pedicel small, sub-triangular. Flagellum, flattened leaf-like, about three times the length of the scape; second and third joints widest, wider than the scape, from thence narrowed toward tip; the last three joints closely united, as long as the two preceding. The small joints at the base of the scape are unusually large, the first of them nearly as long as the pedicel. Mesonotum finely

* Proc. U. S. National Museum, XXII, 1202, p. 355.

shagreened; wings small, finger-shaped, reaching but little beyond the middle of the abdomen. Axillæ just meeting at the base of the scutellum, the latter a little longer than wide, sub-triangular, the tip narrowly truncate and the posterior angles microscopically dentate and black. Abdomen slightly longer than the head and thorax, oval, at the sides of the second segment with a small black tubercle which bears two long black setæ. Legs rather slender.

Female.—Length 1.2–1.3 mm. This sex differs by its smaller head, the eyes being much closer together on the front, and the lateral ocelli nearer to the eye margin. The mandibles are stouter, distinctly bidentate, and the antennæ are wholly black except the upper part of the scape. The flagellum is sub-cylindrical, but little flattened, nearly one and one-half times as long as the scape; the joints wider than long, the last pointed and twice as long as the penultimate. The legs are darker especially the middle tibiæ.

Described from one male and three female specimens collected at Austin, Texas, during May, 1900.

A. xerophila is related to *A. neomexicana* Ashm., but differs by its much shorter scape.

The species was fairly abundant on an arid hill-slope near Austin at the time the types were collected. They were moving actively about in the bright sunshine on the bare parched soil, where other insects were very scarce. Associated with them was found the closely related *Henicopygus subapterus* Ashm.

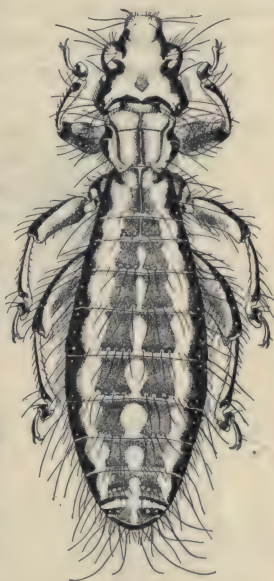
A Gigantic New Biting Bird-Louse.

By VERNON L. KELLOGG, Stanford University, Calif.

Gigantic is a relative term; a gigantic new vulture would mean several linear feet of bird, but a gigantic new Mallophagan found on a vulture means but several linear millimeters of insect. As in the fifteen hundred or more species of *Mallophaga* so far known the average or modal length is hardly two millimeters, a species measuring nearly eleven millimeters is truly a giant among its fellows. In 1903 Mr. Charles P. Lounsbury, government entomologist of the Cape of Good Hope, took half a dozen specimens, which "appeared to be all of the creatures present on the body of the host," of a very large biting bird-louse from a Griffon Vulture, *Gyps kolbi*, shot at Nelspruit in the Eastern Transvaal. The specimens represent a species hitherto un-

known to us, and the largest Mallophagan species so far described. The next largest is *Læmobothorium loomisi* Kellogg, length, 9.7 mm., from the Canada Goose, and the next *Lipeurus ferox* Nitzsch, length 9 mm. from the albatrosses.

***Læmobothorium gypsis* n. sp.**—Fig. 1. Three females from a Griffon Vulture, *Gyps kolbi*, taken at Nelspruit, Eastern Transvaal. Description of female. Body length, 10.5 mm.; a strongly-marked species, readily distinguishable by its size and by the unusual projection and narrowness of the clypeal portion of the head. Head with conspicuous protuberant pre-ocular regions, and sharply defined elongate narrow clypeal region; the temples strongly marked and angulated; hairs large and numerous and conspicuous on pre-ocular and temporal lobes; on anterior margin of clypeus two long hairs in each angle and numerous short ones in marginal region; before each eye a single strong hair, and behind eye a distinct row of short, stiffish even spine-like hairs along lateral margin; strong black brown cuticular markings along all lateral margins except antero-lateral angles of clypeus; the black brown marking projecting in and curving so as nearly to set off the pre-ocular lobes; occipital margin strongly, but narrowly, black-brown. Prothorax shield-shaped, with fringe of short hairs along anterior margin and long strong hairs in antero-lateral and medio-lateral angles; also numerous hairs along postero-lateral margins; posterior margin broadly and shallowly emarginate in middle producing two distinct, backward-projecting, obtusely-angled points; strong black lateral marginal markings, widest in middle and tapering out anteriorly and posteriorly. Metathorax like an abdominal segment but twice as long as the true first abdominal segment; strong black lateral marginal border containing a few pustulated hairs. Legs with many strong hairs and with strong markings. Abdomen with strong black lateral borders and each segment with a pair of dorsal, paler, large blotches; these blotches nearly fused on the median line in segment one, but separated on all other segments by a medial uncolored space of curious sub-elliptical or vase-shaped outlines, these spaces larger on the wider segments, and successively wider in proportion to their postero-anterior length as one examines the segments from before backwards; three or four pustulated hairs in the posterior margin of each abdominal blotch, and many hairs, long and short, along the lateral margins of the whole abdomen.



Observations on the Bionomics of *Auchmeromyia luteola* Fabricius.

By F. C. WELLMAN, M. D., Benguela, W. Africa.

Published under the auspices of the American Society of Tropical Medicine.

Several years ago I was interested in the native saying that the fly mentioned in the title of this note produces the blood-sucking maggot called "*Inyo*" by the Angola Bantus. When in London, in August, 1904, I submitted several of the flies under discussion to Mr. Austen, of the British Museum, mentioning to him some facts as to their habits. He pronounced them to be *Auchmeromyia luteola* Fabr., and called my attention to the communication of Dutton, Todd and Christy to the



Fig. 1.—Ovum (A), larva (B), and pupa (C) of *A. luteola* Fabr. Natural size.

Fig. 2.—*Auchmeromyia luteola* Fabr. Female natural size.

Fig. 3.—Teased pupation of the cephalic end of larva showing chitinous armature.

British Medical Association concerning the fly's larva. A short time afterwards I read the communication in question in the British Medical Journal under the title "The Congo Floor Maggot."* On my return to Africa I began studying the fly with the object of determining as far as possible by actual observation its general habits and the steps in its metamorphosis.

At first the flies died in captivity, but on discovering

* September 17, 1904, p. 664.

that they will eat fermented vegetable matter I was able to keep them under observation for long periods in cages. They are attracted by the smell of vinegar, maize beer or any sour smell, and may be captured by using paper soaked in vinegar as a bait.

I hope to publish on some future occasion the morphological observations which I have made, so I give here very brief notes on the appearance in the various stages.

THE OVUM.

The ovum* (Fig. 1, A) is light cream color, about 1.5×0.6 mm. in size with smooth surface and oval outline.

THE LARVA.

The larva (Fig. 1, B) has eleven segments, mouth parts formed for piercing, and is of a light gray color. Its size ranges from about 0.2 mm. long in very young specimens to 15 mm. in those about to pupate.

THE PUPA.

The puparium (Fig. 1, C) is deep brown in color and is 9.5–12 mm. in length.

THE IMAGO.

The imago (Fig. 2), first described by Fabricius, is 12–14 mm. in length, stoutly built and of a tawny color with dark markings.

The distal half of the abdomen is blackish. As Mr. Austen informs me that it is common along the entire west coast of Africa,† the name which has been given to the larva—"Congo" floor maggot is manifestly incorrect and misleading.

HABITS AND LIFE HISTORY.

A. luteola is partly domestic and partly sylvan in its habits. When one sits in a native village the flies come buzzing about him, in the evening especially, as if seeking an inhabited spot to oviposit. I, however, saw a number of individuals one evening (Feb. 4th, 1904) in the bush half a mile from any

* From the ovary of a pregnant female.

† It has recently been reported from Uganda (*vide* Journal of the Royal Army Medical Corps, November, 1904).

habitation. They were flying about with a loud buzzing noise, settling from time to time on trees, stumps, etc. On watching them I saw several couples *in copula*. I left the spot after sundown and, although dusk was coming on, the flies were still active. The female when ready to oviposit usually enters a native hut and settles on the wall or thatch generally remaining motionless for some time. If undisturbed she alights on the mud floor and begins scratching with her first pair of legs in the dust, preferably in a dark corner. She then lays her eggs in the dust, afterwards scratching again in the same manner as if to cover them. I was fortunate to witness this process on one occasion. I was unable to ascertain the number of the eggs at this time as it was dusk, and, with no means of procuring a light, the eggs could not be seen in the light colored dirt rich in kaolin, which is generally used to plaster walls and floors. The average number of eggs in a series of gravid females dissected was 54.

In my experiments a number of pregnant females were placed in a gauze cage containing a handful of sand which had been sterilized by red heat. In three days there appeared very small larvæ which were identical with the "*Inyo*" or biting maggot found by me in native kraals and often brought by boys collecting for me. I examined the sand with a lens on the first and second days of the experiment but, I am sorry to say, overlooked the eggs. Still I am confident the fly is not viviparous, as the moving larvæ would have immediately caught my eye. Flies dissected, too, even when gestation was complete, always contained ova only.

In natural circumstances the larvæ are most abundant under mats where children who urinate during sleep have lain, showing that either the imagines or larvæ (or both) seek such places as promising sooner or later the presence of suitable blood-producing hosts. The larvæ are voracious blood-suckers and their bite is severe. One bred out from my captive flies, and which I allowed to bite my arm in several places, produced wheals which were the seat of marked burning and itching which did not entirely disappear for four days. The suggestions as to the possibility of the larvæ being the carrier

of disease-producing organisms deserves attention, and experiments with it should be made. The length of time for a newly-hatched larva to arrive at the pupal stage varies greatly with the temperature and available food. A large number of larvæ observed by me in captivity died without pupating. Some lived as long as seven weeks without entering the pupal stage. Although their normal food is human blood yet they will, if carefully handled, bite any warm blooded animal which has been shaved on the part of its body which touches the ground as it lies down. As it bites animals with difficulty, I fed mine on a native boy. Larvæ kept without food die.

Six new pupæ were kept 29, 30 and 31 days before the imagines escaped. The imagines which emerged from the puparia in my experiment were in every case identical with those I had kept in captivity and also with the specimens determined by Mr. Austen.

While I cannot claim to have actually seen every detail in the metamorphosis, yet the method used (breeding out under closed cages in previously heated sand) is guarantee against fallacy and precludes possible heterogenesis; so that we may be assured that we have the full life-history of the fly, which may quite possibly be found to play no unimportant *role* in tropical pathology. I do not know (having been in Africa) whether or not additional work, completing the description of the metamorphosis of *A. luteola* has been published since the paper to which I have above referred. However, I publish this short record of my observation of the life history from imago to imago, since it will at least serve as a confirmation of any work on the subject that may have been done in the *interim*.

REVERIE OF A MOSQUITO.—“It's a hard row to hoe, and for growling this human race is the wonder of the universe. I've got to live as well as the rest of 'em, but if I approach a victim and sing ere I bite, he growls and swears he wouldn't mind it so much if I didn't sing; then if I steal upon him silently he complains that he was hit without warning. And then when the doctors can't discover a fever germ they swear I'm at the bottom of the whole business and have my picture taken and write books about me and make national reputations at my expense. But it's all right, I guess, and I reckon I'll pull through; I'm really an aristocrat in disguise and good blood flows in my veins—in fact the best in the country.”

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., FEBRUARY, 1906.

The great number of undescribed species of insects in this country made it necessary for those interested in entomology to devote a considerable portion of their time to systematic work and to the description of these forms. There is no doubt that many species have been described from insufficient material without proper data and we have also had the "splitter" with us. Now that the great territory between the Mississippi and the Pacific Ocean is becoming better known and series of good material accumulating, it has become possible to ascertain the true relationship between many described forms. The great desideratum at the present time is an efficient nomenclature that will properly express the relationship of allied forms. The old term variety has been found more or less wanting, but it had the great advantage of showing relationship between names. It is a question whether the trinomial system is much of an advance. Terms like "topomorph" express an idea of evolution but do not necessarily show relationship. We notice recently that a number of persons are compiling data from various collections to get at the relationship of species through distribution, time of appearance, etc., and we will look forward with pleasure to the outcome. Cooperative studies of this kind may give excellent results.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS
OF THE GLOBE.

In my article on "Mosquitoes in Mississippi" in the November NEWS, I inadvertently wrote *niger* for *nigripes* in reference to the fourth species of *Anopheles* taken in the State.—GLENN W. HERRICK, Agricultural College, Mississippi.

EDITORS OF ENTOMOLOGICAL NEWS:—Just a word to acknowledge a few minutes of real enjoyment in reading the letter of Mr. Henry Clay Weeks in the January NEWS. Its very violence makes it unnecessary for me to reply, but I do wish to disclaim any feeling of jealousy. So far as I am aware, Mr. Weeks has never done anything that any one need be jealous of. That he has done and is doing work in New Jersey may be true, because even in New Jersey there are men with more money than brains. As for the rest, my original letter stated facts which are easy of verification. I cannot say the same for the answer.—JOHN B. SMITH.

THE LARVA OF APATELA FUNERALIS G. & R.—The conundrum propounded by Mr. R. F. Pearsall as to the identity of a certain larva found by him but not bred is apparently solved by the above title. Mr. Pearsall describes (ENT. NEWS, xvii, 22, 1906) the spatulate appendages as cream color, whereas they are in reality black, an error possibly induced by their very shiny character. A description of the larva, with references, can be found in Proc. U. S. Nat. Mus., xxi, 103, 1898. Mr. Pearsall's observation of the penultimate stages resembling bird-droppings is new, although the European *A. alni* is known to have this character, and our species therefore should have it also. The observation on construction of cocoon is also new, Harris giving a different habit.—HARRISON G. DYAR.

PELSTONEURUS NIGRESCENS WHEELER, a synonym of *P. dissimilipes* Wheeler; a correction.—Mr. C. W. Johnson has recently called my attention to a singular *lapsus* in my paper entitled: "New species of Dolichopodidæ from the United States." (Proceed. Calif. Acad. Sci. 3rd Ser. Zool. Vol. II, No. 1, 1899). Fig. 21, Pl. I is described as the wing of *Pelastoneurus nigrescens* sp. nov. ♀ and Fig. 27, Pl. II as the hypopygium of the male of the same species, but no such specific name is anywhere mentioned in the text. On looking into the matter I find that both of these figures refer to *P. dissimilipes*, which is fully described at pp. 16, 17. *P. nigrescens* is merely a manuscript name for which I substituted *dissimilipes* while writing out the description. I hasten to make this correction as the name *nigrescens* cannot fail to confuse some future students of the Dolichopodidæ. Fortunately it does not appear in Aldrich's valuable "Catalogue of North American Diptera."

W. M. WHEELER.

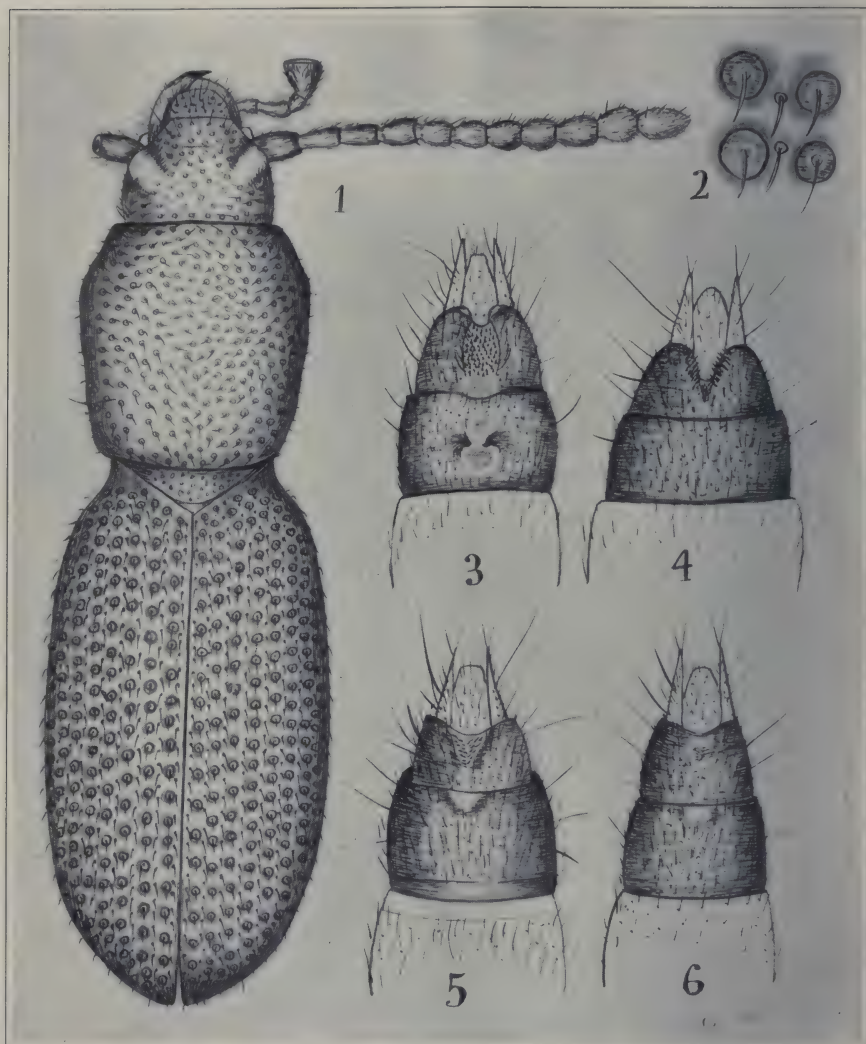
RARE CATCHES IN EASTERN CONNECTICUT.—I do not think that I ever saw a butterfly on the wing on November 18th before this year, although I have been an interested observer for 35 years. To-day I captured upon my lawn a fair specimen of that rare fly for this latitude, *Vanessa J. album*. It is the first one I ever captured. Mr. Archibald Mitchell has taken three in the past 30 years, and two of them were taken in his dwelling. I was surprised on July 22nd of this year by the sight of *Vanessa milberti* in my garden, and I had the good fortune to capture it. It showed no wear from prolonged flight and was in fine plumage. In 30 years I have only seen one other specimen hereabouts and that was 20 miles north of Norwich. After the middle of October I have had brought to me Drury's *Saturia maia* from the fields as fresh as if just emerged, and I have since thought that their late appearance may make them seem to be rarer than they are. Then there is Drury's *P. epimenis*, which flies here and is taken on the wing as early as April 12th when the temperature is quite cool. Only one example of Drury's *Erebus odora* have I seen, and that was captured in first-class condition. Only one *Junonia coenia* have I ever seen in New England, and that was on a shingly beach at Ipswich, Mass. While *Vanessa J. album* is reported to be rare south of Northern New Hampshire and Maine, I had the luck three years ago on a cool October day to see, when without a collecting kit, a half dozen or more flitting about a trolley car station a few miles west of Taunton, Mass.—A. W. PEARSON, Norwich, Conn.

Doings of Societies.

At the meeting of the Feldman Collecting Social, held December 20th, 1905, at the residence of Mr. H. W. Wenzel, ten members were present and Dr. Molson, visitor. President Daecke in the chair. Mr. Laurent exhibited bred specimens of *Pamphila manataaqua* and *cernes* pointing out how to differentiate the two species, but adhering to Dr. Skinner's remark that they are closely allied specifically, and he asked to know the structural differences by which the two species were placed in different genera by Dr. Dyar.

Mr. Haimbach exhibited some specimens of *Coleoptera* and *Lepidoptera*, taken at Roxborough on December 3rd, under bark. Among the latter there were several specimens of *Phyllocnistis vitigenella* Clem. This species is represented in the speaker's collection by specimens taken at Cincinnati, Ohio, on May 2nd, August 25th and October 9th, and at Roxborough, Philadelphia, on December 3rd.

F. HAIMBACH, *Secretary*.



ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

MARCH, 1906.

No. 3.

CONTENTS:

Blaisdell—New Californian Coleoptera	71	Bridwell—A second species of the Hymenopterous Genus <i>Odontophyes</i>	
Brimley—Notes on the Odonata and other Insects of Lake Ellis, North Carolina.....	81	Konow (<i>Xyelinae</i>).....	94
Hancock—Descriptions of new Genera and Species of the Orthopterous Tribe <i>Tettigidae</i>	86	Skinner—New Butterflies and Moths, with notes on some species.....	95
Brimley—North Carolina Records of Odonata in 1904 and 1905, with corrections of some previous records	91	Busck—Description of Amer. Moths of the Genus <i>Cerostoma</i>	96
McClendon—Notes on true Neuroptera	93	Editorial.....	100
		Notes and News.....	101
		Doings of Societies.....	101

New Californian Coleoptera.

By F. E. BLAISDELL, M. D.

(Plate II.)

Recent collecting in California has brought to light a most interesting blind *Tenebrionide*, and while making it known, I have grasped the opportunity to describe other new species, as follows:

Lathrotropis caseyi sp. nov.—Elongate, parallel and shining, color variable, when mature rufo-piceous, with legs rufous. Head, about equal in width to the elytra, about as long as wide, evenly convex; sides very feebly arcuate, about parallel, broadly and evenly rounded at base; eyes, small, not in the least prominent; punctures moderate in size, irregular, sparsely placed at centre of frons, denser at the periphery; antennæ rather stout and short, joints two and three obconical and subequal in length, fourth rather short and apparently wider than long, fifth to the tenth inclusive about as wide as long, eleventh pointed oval and a little longer than wide. Prothorax oblong-oval, a little longer than wide, sides parallel, angles broadly and evenly rounded, the anterior scarcely more so than the posterior; punctures similar to those on the head, sparsely and irregularly arranged, median smooth line rather broad. Elytra subquadrate, parallel, a little longer than wide, slightly longer and one-fourth wider than the prothorax; punctures subseriately

placed, becoming quite irregular at the periphery, rather coarse and slightly impressed. Abdomen parallel and about as wide as the elytra, surface throughout extremely finely rugulose.

Male.—(Fig. 3 of plate). With the sixth segment at apex rather deeply emarginate, bottom of the emargination rounded, sinus about as wide as deep, sides divergent, angles rounded and with a narrow membranous margin; surface at apical two-thirds with a large median oblong-oval impression, the latter set with small, short, black chitinous points, the sides of the concavity fringed with sparsely set inwardly curved hairs, the concavity is continued to the segmental base by a broad, glabrous, shallow groove. The apex of the fifth segment is more or less slightly sinuate at middle; surface marked with a broad, shallow, glabrous longitudinal groove, which passes at middle third into a rather broad circular concave impression that is glabrous and guarded laterally and posteriorly by two small, short, black chitinous, obtuse and more or less incurved tubercles. The groove at apex has a few scattered hairs.

Female.—With the sixth ventral broadly and obtusely rounded at tip, and apparently with a minute triangular impression at middle. The fifth ventral is unmodified. Measurements—♂. Length, 8.0 mm.; width 1.0 mm. ♀—Length, 7.0 mm.; width, 1.0 mm.

Hab.—Shasta Retreat, Siskiyou Co., California; elevation, 2,416 feet.

A large series of this species was taken by sifting along the banks of the mountain streams in July, at the above-named locality. The secondary sexual characters are sufficiently distinct to justify my describing it as new. I cannot refer it to any of the species described by Maj. Casey from single females. In some points it appears close to *validiceps*. Species possessing a community of habitus should not be founded upon females when the male characters are taken as the criterion.

I take pleasure in dedicating the present species to Maj. Thos. Casey in recognition of many favors, and also that his name may occur among the many that he has so aptly described.

In the plate I have figured other species for comparison. A work to be truly valuable should have all of the species figured in some way or another; no words can convey to the mind of the student the details of morphological characters like a correct drawing or even a simple diagram.

Figure 4 of the plate shows the secondary male sexual characters of what I recognize as *L. puncticeps* Lec., although not

typical: "male with a small feeble rounded impression at the apex of the fifth ventral, the apex broadly and feebly sinuato-truncate; sixth segment with a large triangular emargination at tip, generally not quite a third as wide as the apex and nearly as deep as wide, the surface narrowly elevated along the median line toward the notch, the ridge clothed with short stiff black spicules, some of the latter also present at the apices of the segment at each side of the notch" (Casey). The specimen figured was taken at Leona Heights, Alameda Co., California.

Figure 5 of the plate is taken from what I have found as the most common species: "Male with a small unimpressed glabrous area at the middle at apex of the fifth ventral, the sixth with a triangular impression, the apex broadly, parabolically sinuate" (Casey). It is undoubtedly a *jacobina* Lec. By the figure it will be seen that the triangular impression of the sixth ventral is clothed with short and minute spicules, and that they do not quite reach the margin. Casey does not mention this fact, and leaves the student in doubt. I have not seen any other form that I could refer to *jacobina*, and I have examined a large series taken in Alameda, San Francisco, Calaveras and Eldorado Counties.

Figure 6 gives a form found at San Diego, and appears related to *relicta* Casey. "Male with a small and very faint oval impression at the apex of the fifth ventral, the sixth with a broadly parabolic, shallow, gradually formed apical sinus, about a third as wide as the segment, and six times as wide as deep, the surface adjoining extremely feebly impressed, the impression having a small patch of black spicules anteriorly." (Casey) If this is *relicta* it appears as a less strongly developed form of *jacobina*. I find the secondary sexual characters variable. I have figured three distinct forms and each must vary considerably, and by experiments in heredity might prove to be dominant or recessive forms, as the case might be. Let students obtain a hundred specimens to each one they now collect for a cabinet set, and let them record variations. It will prove interesting and valuable.

The following two species of *Dasytes* belong to that section

in Casey's synoptic table in which the submarginal line of the pronotum is strongly impressed and entire, and with the pubescence intermingled with larger black hairs.

Dasytes vicinus sp. nov.—Oblong, rather stout, black, shining, with a feeble virido-æneous lustre, and moderately convex; antennæ black to slightly piceous; femora black, tibiæ and tarsi rufo-ferruginous to picescent; pubescence sparse, long and rather bristling, consisting of more or less suberect and backwardly curved, luteo-cinereous hairs on elytra, those on the head quite erect, on pronotum irregular in direction, otherwise similar, and abundantly intermixed with more or less erect, slightly stouter, black and stiffer hairs, which are on the elytra slightly backwardly curved, irregularly so on the pronotum, more erect on the head and slightly longer about the humeri, gradually becoming slightly shorter toward the elytral apices. Head scarcely transverse, about (♂) or scarcely (♀) as wide as the prothorax at apex, front not impressed, very slightly and evenly convex, quite evenly and not very closely punctate, punctures rather impressed, slightly denser on the vertex, occiput, and tempora, epistoma more or less impunctate; eyes not prominent and moderate in size, and not very coarsely granulate; antennæ longer than the head and prothorax, rather stout (♂), or filiform and scarcely longer than the head and prothorax (♀); suberrate, joints 3-10 subtriangular (thicker in the ♂), third slender and longer than wide (♀), eleventh ovate and about twice as long as wide. Prothorax about as wide as long (♂) or slightly transverse (♀), widest behind the middle, sides moderately arcuate in basal half, less so and feebly converging anteriorly, feebly sinuate behind the apical angles; edges subserrulate; apex scarcely as wide as the base, and arcuato-truncate in circular arc; apical angles obtuse and scarcely rounded; base broadly and moderately arcuate, subsinuate laterally; basal angles scarcely evident and obtuse; disc evenly and moderately convex, less so antero-posteriorly, strongly punctate, punctures impressed and separated by less than their own diameters, slightly denser in the ♀, intervals smooth, more or less feebly convex, or flat in the ♂; submarginal line strong and entire, submarginal area coarsely reto-rugose.

Elytra rather large, less than twice as long as wide; sides feebly arcuate, subparallel (♂) or slightly widened behind the middle (♀); base slightly wider than the prothorax; humeri scarcely at all tumid; apex rather obtusely parabolic, sutural angles feebly and narrowly rounded; disc moderately convex, punctate, the punctures irregular, coarse, impressed and separated by their own diameters or less, interspaces more or less feebly convex with a tendency to form transverse and very feebly evident rugulæ. Abdomen finely and rather densely punctulate, and apparently more or less minutely reticulate; pubescence rather sparse and luteous, the hairs recumbent and rather long. Measure-

ments—♂. Length, 2.5 mm.; width, 1.0 mm. ♀. Length, 3.0 mm.; width, 1.3 mm.

Hab.—San Diego, California.

This species, although related to *hudsonicus*, differs from it and also from *obtusus* sufficiently by the coarse punctuation, and from *expansus* by the more convex form and coarser pronotal punctuation.

The male has the fifth ventral rather broadly arcuato-truncate, and the female has the fifth ventral slightly lobed at middle, the sides appear slightly sinuate from being rather strongly reflexed while the middle is subhorizontal and just slightly deflexed.

Described from a ♂ and ♀, a small series all together, that was not taken at a high altitude. One of the type specimens was examined by Casey and bears his label n. sp.

Dasytes shastensis sp. nov.—Stout, oblong, black, moderately convex, feebly shining, lustre slightly dull and feebly virido-æneous, antennæ, tibiæ and tarsi frequently picescent; pubescence sparse, moderate in length, consisting of rather decumbent luteo-cinereous hairs intermingled with moderately long blackish stiff hairs, which are erect and bristling on head and pronotum and slightly backwardly directed on the elytra. Head, evidently transverse, a little wider than the prothoracic apex, interocular region rather broad, not impressed and very feebly convex, quite evenly and rather closely punctate, punctures small; eyes rather prominent and somewhat coarsely faceted; antennæ slender and filiform and reaching about to base of the prothorax, third joint slender, obconico-cylindrical and about twice as long as wide, eleventh ovate, laterally compressed and somewhat pointed at tip. Prothorax about one-third wider than long, widest a short distance behind the middle; disc quite strongly convex; less so antero-posteriorly, punctate, the punctures small, distinctly defined and separated by a distance equal to twice or at least their own diameter, interspaces flat and rather smooth, submarginal line strong and entire, submarginal area reto-rugose; sides quite evenly arcuate, feebly convergent anteriorly, with edges finely and irregularly subserrulate; apical margin slightly arcuate in circular arc; base moderately arcuate and feebly sinuate laterally at submarginal area and a little wider than the apex; apical angles rounded; basal angles broadly rounded and continuing the sides into the base. Elytra rather broad, distinctly less than twice as long as wide, and slightly widened posteriorly; base slightly wider than the prothorax; humeri scarcely tumid; sides feebly arcuate and subparallel; apex obtusely parabolic, sutural angles very narrowly rounded; disc moderately convex, punctate, the punctures

fine, separated by a distance at least twice their own diameters, interspaces flat and obsoletely, minutely reticulate. Abdomen rather densely punctulate and clothed rather densely, especially at the sides and on the fifth segment, with moderately long, recumbent, luteo-cinereous hairs. Measurements—♀ ♀. Length, 2.8-3.0 mm.; 1.0-1.2 mm.

Hab.—Shasta Retreat, Siskiyou Co., California, elev. 2416 ft. Beaten from the flowers of *Quercus echinoides* var. *densiflora* in July.

The specimens before me are apparently all females, the apical margin of the fifth ventral segment is feebly arcuate, and the third joint of the antennæ slender.

This species differs from *vicinus* in its much finer punctuation; from *hudsonicus* it is recognized by the broadly rounded basal angles of the prothorax. The pubescence is noticeably shorter than in *vicinus*, and less bristling and lighter in color than in *hudsonicus*, the prothoracic proportions are quite different in the two species. *Obtusius* occurs in Colorado and has the elytra finely, sparsely and but slightly rugosely punctate. *Expansus* which occurs north of San Francisco is more depressed in form.

Casey's synoptic table may be modified as follows for the reception of the above species:

Pubescence distinctly intermingled with longer erect black hairs.

Elytral vestiture blackish throughout; thoracic sculpture rather dense **hudsonicus.**

Elytral vestiture luteo-cinereous throughout except the longer erect, black hairs; thoracic punctures coarse and impressed. **vicinus.**
Thoracic punctures fine not impressed. Basal angles broadly rounded **shastensis.**

Elytral vestiture cinereous, except the longer erect black hairs; basal angles obtuse and slightly blunt; thoracic punctures sparse. **obtusius.**

Elytral vestiture cinereous but becoming dark and inconspicuous behind the middle; elytra broad and depressed . . . **expansus.**

The following remarkable blind Tenebrionide was discovered by Mr. F. W. Nunenmacher on June 11, 1904, at Fairfax, Marin Co., California.

ESCHATOPORIS gen. nov.

Body moderately depressed. Head not strongly retracted into the prothorax, scarcely narrowed behind, sides not promi-

ment, anteriorly moderately converging; front not dilated; epistoma truncate in feeble arc; labrum moderately transverse and exposed; mandible emarginate, superior cusp acute and longer than the smaller and shorter cusp; mentum small and subquadrate, gular peduncle distinct; labial palpi small; maxillary palpi with the last joint dilated and triangular; antennæ 11-jointed, inserted under a distinct ridge. Eyes absent. Prothorax loosely articulated with the mesosternum; prosternum not at all prominent ventrally, rather long before the coxæ; propleura slightly convex and not defined from the prosternum. Elytra at humeri quite rapidly retreating posteriorly so as to give a feeble sub-pedunculated appearance to the body, not widely nor firmly embracing the flanks of the abdomen; epipleura narrow, scarcely inflexed, and not well defined from the elytral disc, margin broadly and slightly sinuate behind the sterna. Mesosternum and metasternum moderate in length, the former scarcely more prominent ventrally between the coxæ than the anterior condylar portion. Scutellum broad and triangular, not prominent nor very distinctly defined and but feebly entering between the elytra. Episternal pieces not distinctly defined, the metasternal episterna evidently narrow with the epimera short and as long as wide. Hind margins of the third and fourth abdominal segments subcoriaceous, with the third and fourth ventral sutures moderately impressed, corresponding segments not emarginate at apex. Intercoxal abdominal process broad and parabolically rounded between the coxæ and about a third of its width wider than the mesosternal salient. Sternal sutures scarcely at all evident. Anterior coxæ small and rounded, rather narrowly separated by the prosternum. Middle coxæ rounded, moderately widely separated and with a small but distinct trochantin. Hind coxæ oval, feebly narrowed externally, transverse and distant. Legs moderate and simple; profemora moderately clavate, mesofemora less so, metafemora but slightly thickened externally. Tibial spurs small and distinct. Tarsi obsoletely grooved beneath, and moderately slender; claws slender and simple.

An analysis of structural characters shows that the genus

Eschatoporis is distinctly related to the tribe *Scaurini*, although there are certain disturbing elements, which can no doubt best be brought out by direct comparison as follows :

MUTUAL SCAURININE CHARACTERS.	CHARACTERS PECULIAR TO THE <i>Scaurini</i> .	CHARACTERS PECULIAR TO <i>Eschatoporis</i> .
Body elongate and apertous; mentum small; ligula prominent; gular peduncle distinct; maxillary palpi with last joint dilated and triangular; antennæ 11-jointed. Elytra not embracing widely the flanks of the abdomen; epipleura reaching tip of elytra. Hind margin of the 3d and 4th abdominal segments subcoriaceous and corresponding sutures impressed. Anterior coxæ rounded; middle coxæ with a distinct trochantin; hind coxæ oval and widely separated. Tarsi spinous beneath. Scutellum broad and not penetrating between the elytra.	Head prolonged behind the eyes; eyes present; front dilated; labrum covered; antennæ with outer joints broader and transverse. Side pieces of the mesosternum distinct. Third and fourth ventral abdominal segments deeply emarginate, in all genera except one. Legs long, sometimes toothed. Tibial spurs distinct or long.	Head not prolonged behind the eyes; eyes absent; front not dilated; labrum exposed; antennæ with outer joints scarcely at all broader. Side pieces of the mesosternum scarcely distinct. Third and fourth segments scarcely emarginate (as in <i>Eulabis</i>). Legs moderate and simple (as in <i>Eulabis</i> .) Tibial spurs small and distinct.

By comparison it appears that if the genus is to be Scaurinine, the tribal characters must be revised or else two sections be recognized, or else a new tribe (*Eschatoporini*) be erected for its reception. The genus *Eschatoporis* is related to *Eulabis* in the form of certain abdominal segments and the legs, otherwise it has a Scaurinine habitus, although very small in comparison to the other tribal constituents. In the tribe *Scaurini* it must be placed between *Eulabis* and *Cerenopus*.

***Eschatoporis nunenmacheri* sp. nov.**—Elongate, oblong-oval, about three times longer than wide, rufo-testaceous, sparsely clothed with pale pubescence, more or less glabrous and shining, strongly, coarsely and quite evenly punctate, the punctures more or less distinctly ocellate. Eyes absent. Head rather small, somewhat coarsely and sparsely punc-

tate, each puncture anteriorly with a rather long suberect hair, elsewhere the hairs are shorter and semi-recumbent; frons nearly plane, limited laterally by the supra-antennal convexities; frontal suture fine and more or less distinct; vertex slightly and evenly convex, continuously so with the tempora laterally, the latter scarcely arcuate behind the antennæ and not in the least prominent; antennæ long, reaching beyond the base of prothorax, comparatively stout, gradually and feebly incrassate, each joint subcylindrical and narrowing slightly from apex to base, joints two and three subequal in length and obconical, joints four, five and six equal in length to the third, suboval in outline with side more arcuate, joints seven and eight slightly longer and a little more robust, the seventh suboval, the eighth suborbicular, joints nine and ten stouter, eleventh oval and about one-half longer than wide. Pronotum subquadrate, a little longer than wide, widest at junction of middle and anterior thirds; disc evenly, moderately and transversely convex, scarcely so antero-posteriorly, quite coarsely, sparsely and irregularly punctate, each puncture with a rather short, curved and semi-recumbent seta; apex truncate in circular arc, not margined; sides rather unevenly and not strongly arcuate in anterior moiety, thence very feebly arcuate or straight and slightly converging to base, margin distinct but not beaded; base feebly rounded and obsoletely beaded and about equal to the apex; apical angles obtuse and not rounded, nor anteriorly prominent; basal angles more or less rounded. Propleura slightly convex, sparsely and subocellately punctate, punctures smaller than on the disc; surface more or less very minutely rugulose posteriorly. Elytra oblong-oval, about twice as long as wide, widest at middle two-fourths; base not margined and moderately distant from the prothoracic base, the mesonotal condylar region moderately exposed giving a subpedunculated effect; humeri obsolete; sides moderately arcuate and rather gradually retreating from the humeral region, subparallel at middle two-fourths and thence to apex evenly arcuate; subparabolically rounded; disc moderately depressed and very feebly convex on dorsum, laterally moderately rounded and not inflexed, very feebly, evenly and arcuately declivous posteriorly, punctate, the punctures more or less ocellate and distinctly seriate on dorsum, becoming irregular at the periphery, the stria punctures are comparatively large, circular and somewhat shallow, each with a curved, semi-recumbent, moderately short seta, arising from a centrally placed, minute eminence, the interstitial punctures small, each with a seta similar to those of the stria punctures. Sterna and parasterna coarsely and rather sparsely punctate, and ocellate as above, each puncture with a short seta. Abdomen feebly convex, moderately coarsely and sparsely punctate, each puncture with a moderately short nearly recumbent seta. Legs moderate. Tibiæ rather slender and clothed with fine moderately long hairs. Tarsi similarly clothed, the feeble grooves beneath margined by pale delicate spinules. Measurements—♂.—Length, 3.2 mm.; width, 1.0 mm. ♀. Length, 3.9 mm.; width, 1.2 mm.

Hab.—Fairfax, Marin Co., California, June.

Mr. Nunenmacher stated that he obtained the specimens while digging in a ledge near a spring. He did not state whether they were taken in company with ants. He was collecting *Promecognathus lævissimus* at the time.

At first glance, before examination, this species might be mistaken for *Bembidium rickseckeri*, but it was lighter in color and of slower movements; at a casual glance it more resembles *Bembidium laticeps* in form and color.

The sexual characters are not very evident, the male is evidently smaller and narrower. The metasternum is slightly impressed at middle just in advance of the abdominal process.

The first abdominal segment is equal in length to the fourth and fifth taken together, and its post-coxal portion is equal to the length of the third; the second is a third longer than the third. The tibial grooves of the femora are moderately well defined. The tarsal grooves of the tibiæ are not evident. The protarsi have the first and second joints when taken together about equal to the length of the fifth; the first slightly longer than the second, the third and the fourth are shorter and not equal in length. In the mesotarsi, joints one and two are subequal in length and together about as long as the fifth; the third and fourth taken together distinctly longer than the second, the third is distinctly longer than the fourth. The metatarsi have the first joint at least as long as the third and fourth taken together, and about twice as long as the second, the latter being about a third of its own length longer than the third joint.

EXPLANATION OF PLATE II.

- Fig. 1. *Eschatoporis nunenmacheri* dorsal view, ♀.
" 2. The elytral punctuation more highly magnified.
" 3. Secondary sexual characters of *Lathrotropis caseyi* sp. nov., ♂.
" 4. Male secondary sexual characters of *Lathrotropis puncticeps* Lec.
" 5. Male secondary sexual characters of *Lathrotropis jacobina* Lec.
" 6. Male secondary sexual characters of *Lathrotropis relictæ* Casey.

Notes on the Odonata and Other Insects of Lake Ellis, North Carolina.

BY C. S. BRIMLEY.

On Monday, June 19, 1905, H. H. Brimley, Curator of the North Carolina State Museum, Franklin Sherman, Jr., State Entomologist, and myself, left Raleigh for a week's visit to the lakes in Craven County, N. C., the main object of the trip being to obtain one or more large alligators for the State Museum at Raleigh.

These lakes are part of a large tract of some thousands of acres, leased as a game preserve by Mr. Nicoll, of Newbern, and permission had to be obtained from him before we could visit them. This permission was very readily granted, and every facility was put at our disposal, including the use of the hunting camp near Lake Ellis (Camp Bryan).

On reaching the camp, which is some six miles from the railroad at Havelock, we found Mr. Nicoll's son awaiting us, and after dinner we all started towards Great Lake, where the alligators are said to be most numerous, Mr. Nicoll acting as guide. Now between the camp and Great Lake lies Lake Ellis, a sheet of shallow water some three miles or so across, and at this time only some six inches to two or three feet deep, which was in the past drained and planted in rice, but is now abandoned to natural conditions. This we crossed, wading through the shallow water on the submerged bank of the principal canal, which led us straight toward the woods lying between Ellis and Great Lakes.

By this time Nicoll and H. H. B., who were ahead, had got out of sight of us and, finding the path through the woods too indefinite to follow, Sherman and myself, who had loitered behind, catching or trying to catch insects of various kinds, turned back and retraced our watery path across the lake to camp, leaving the others to secure, as it happened, the only alligator of the trip, which was killed by H. H. B. after an exciting chase.

Next day we crossed the lake again to bring back the alligator skin. Great Lake, I may mention, is a much larger

and deeper body of water than Lake Ellis, and is apparently the home of the most alligators, though they were observed in all the three lakes we visited.

Wednesday morning we all started for Little Lake, which is a smaller lake of the same character as Great Lake, but Sherman and myself again lost our way, and instead explored the neighboring shore of Ellis Lake, catching a good many Odonata and other insects.

Thursday was spent at Great Lake and in the woods between it and Lake Ellis; Friday in the same way, except that I again explored the north side of Lake Ellis, for fish, bugs, etc. Saturday morning H. H. B. and myself went to Little Lake to try to kill alligators, but unsuccessfully, although several were seen and shot at by H. H. B. Sherman collected insects near the camp. In the afternoon Mr. Ballard, who had brought us down from Havelock, took us back again to the depot there and our trip was over.

Quite a number of insects were collected by Sherman and myself, though by no means exclusive attention could be paid to them. About the first insects which attracted our attention were the Yellow Flies (*Diachlorus ferrugatus*), which first came round us in small numbers on our way to the camp on Monday, and which were common around the camp and in the woods throughout our stay. These made their appearance soon after sunrise and kept up their attacks all day and even after sunset until it was nearly dark, furthermore coming into camp to bite us at our meals. The bite was sharp and sometimes left a small red spot on the skin, but no other effects were produced on any of us, either when the fly was frightened away at once or allowed to suck its fill of blood. In the woods they did not attack us while we were in motion, although the different species of *Chrysops* would then come flying around us, but on stopping the *Diachlorus* would at once come and settle all over us, and commence biting with great, if not laudable zeal. Unlike the *Chrysops*, which seem to prefer to settle on the head and upper parts of the body, *Diachlorus* would bite anywhere from head to heel. In biting, *Diachlorus*, which has a short proboscis, has to lower the head and tip the abdo-

men slightly upwards, instead of keeping the body mainly horizontal as *Chrysops* and *Tabanus* do.

Several species of *Chrysops* were taken while flying round us in the woods, and a few specimens near camp, which latter were observed to bite after sunset, but the particular species were not noted, nor did they come into camp (which was a two-roomed frame building) to bite us as the *Diachlorus* did.

The abundant species were *C. flavidus*, *C. vittatus* and a light variety of the latter which I had not seen before, less common were *C. nigribimbo*, *C. lugens*, and an unidentified species. All these were locally known as Yellow Flies, no distinction being made between them and the *Diachlorus*.

Small *Tabanus*, mostly *T. lineola* and *T. costalis*, were common around the camp, while one or two *T. melanocerus* were taken and a few *T. americanus* seen. The windows of the depot at Havelock on the afternoon of the 24th were full of *Tabanus lineola*, hundreds of them in fact. Another *Tabanus* secured was *T. mexicanus*, specimens of which were given us by Mr. Ballard. He had told Sherman on Friday of a green fly that bit stock at dusk and, so far as he knew, all night, and Sherman had asked him to secure specimens; on our way back on Saturday he stopped at his house and brought out a bottle full of them, which proved to be *T. mexicanus*. The same nocturnal habit is also attributed to them by Mr. G. F. King, of Mimsville, Ga., who sent a number to me this summer.

Odonata were particularly abundant on Ellis Lake which is studded with numerous small islands covered with shrubs or reeds; they also abounded in the open spaces around the edge of the lake and around the camp. The various species met with are listed below, those marked with a star have not been previously recorded from North Carolina, so far as I know:

Calopteryx maculata Beauv. A few seen near camp and one taken.
Argia fumipennis Burm. Not uncommon near camp, about six taken.
Argia tibialis Ramb. Rather common in the woods near Great Lake.
Anomalagrion hastatum Say. One male seen on the lake.
Ischnura ramburi Selys. Abundant all over Ellis L.

**Enallagma durum* Hagen. One male caught on Ellis L., June 28, the only specimen of the genus seen, was identified as this by Dr. P. P. Calvert.

Telagrion daeckii Calv. Several seen and two males taken on Ellis L.

- * *Coryphaeschna ingens* Rambur. One male taken by Sherman on edge of Lake Ellis, June 21. Several other large dragonflies that might have been this or *Epiaeschna heros* were seen, but no more taken.
- * *Gynacantha trifida* Ramb.? A single small aeschnid nymph was taken on June 23, which Prof. J. G. Needham says is a *Gynacantha* and possibly *trifida*.
- Anax junius* Drury. A few seen on the lake.
- Perithemis domitia* Drury. Sherman saw one on Lake Ellis.
- * *Celithemis fasciata* Kirby. Common on Lake Ellis in early morning of June 22, but only a few seen at other times. Only three specimens taken.
- Celithemis ornata* Ramb. Rather common on and around Lake Ellis. The amount of black was variable, but always less than in the two specimens previously recorded from the state, so I got Dr. Calvert to identify a specimen to make certain of the species.
- Sympetrum albifrons* Charp. One specimen taken in the road on the way to camp on June 19.
- Mesothemis simplicicollis* Say. Abundant on and around Lake Ellis.
- Pachydiplax longipennis* Burm. Only a few of this species seen on the canal from Lake Ellis.
- Libellula semifasciata* Burm. Tolerably common around the lake, but not seen flying out over the water.
- Libellula auripennis* Burm. The most abundant dragonfly, common everywhere on and around the lake.
- Libellula vibrans* Fabr. Common in open spots in Great Lake woods.
- Libellula axillena* West. Not uncommon in Great Lake woods and around Lake Ellis, but not seen flying out over the lake.
- Libellula incesta* Hagen. One male taken near camp with hyaline wings, and no basal streaks, but with a small black spot at nodus and wings faintly tipped with dusky doubtfully referred to this form.
- Tramea carolina* L. Rather common on and around Lake Ellis.

Among the butterflies, *Papilio palamedes* outnumbered all others, at least four to one, being quite common on various flowers around the edges of the lake, but only a few of the specimens taken were in good condition. Other butterflies observed were a few *Terias lisa*, two *Phyciodes tharos*, a few *Junonia coenia*, *Grapta interrogationis*, and *Limenitis archippus*, one *Debis portlandia*, a few *Neonympha sosybius*, one *Pamphila vitellius*, one *Pamphila fusca* and a battered *Thecla cecrops*. Numerous moths of the genus *Haploa*, apparently all one species, flew up out of the long grass around Lake Ellis, whenever we walked through it.

Among Coleoptera one *Cicindela sexguttata* was taken, and several *C. punctulata*, also on the bare ground round the edges of the lake a third *Cicindela*, not yet identified, which Sherman was inclined to think a form of *marginata*. Rose-chafers were common and had defoliated some of the trees, Sweet Gums (*Liquidambar*) I think, which rather surprised me, as this species (*Macroductytus subspinosus*), though not uncommon in western North Carolina, is quite rare at Raleigh. Among other scarabs we caught several *Anomala marginata* in Great Lake woods. *Silpha americana* was not uncommon, while species of *Phanæus* and *Canthon* were common near camp, for obvious reasons. A number of other not yet identified Coleoptera were also taken.

Among the Hemiptera the only form of note was a Naucorid, which fairly swarmed in the lake among the water weeds, and which Mr. J. R. de la Torre Bueno says is near some Central American species in his possession.

Among the Diptera other than Tabanidæ, mosquitoes were quite scarce, contrary to our expectations, although Sherman picked up a few; the only species I recognized was *Conchyliaestes musicus* in Great Lake woods. I also caught a few Asilids and a big Midaid. Sherman caught a queer-looking fly on the wall of the camp which apparently used its forelegs as antennæ, to judge by the way it wiggled them about.

Among Orthoptera, *Paroxya floridana* and *Leptysma marginicollis* were common in the marshy portions of the country around Lake Ellis, and an *Orphulella*, apparently *pelidna*, was common in the drier parts of its vicinity. Some three, possibly four, species of longwinged *Melanoplus* were taken, one of them *atlanis*. A *Mermiria* and several specimens of a *Spharagemon* unknown to me, as well as some *Dissosteira carolina* and a *Chortophaga viridifasciata* were also taken. Several specimens of Tettiginæ, apparently all *Neotettix bolivari* and *Tettigidea lateralis*, were captured as also a few *Gryllus* and some Blattids. The only Locustids secured were three *Atlanticus*, two *Amblycorypha oblongifolia* and a *Xiphidium fasciatum*.

Among the Hymenoptera Dirt-daubers (Sphecidae) were common around the camp and several Chrysids and a big Mutillid were also secured.

Descriptions of New Genera and Species of the Orthopterous Tribe Tettigidae.

BY DR. JOSEPH L. HANCOCK, F. E. S. (London).

During the preparation of an article on "Tettigidae" for Wytsman's "Genera Insectorum," I have taken the occasion to review a large number of specimens of this group, with the result that I have met with a number of new genera and species. I have deemed it expedient to describe some of these here, in advance of the publication of the article above referred to. The most interesting species in the series is *Amphibotettix longipes*. It is to be regretted that no actual observations of their habits have been made, yet there is hardly any doubt, that this species is fond of living in the water, similar to *Scelhymena*.* This fact is evidenced by the extraordinary dilatation of the lateral margins of both the tibiae, and the metatarsi of the hind legs.

SECTION SCELHYMENÆ.

AMPHIBOTETTIX gen. nov.

Characters: Allied to *Scelhymena*. Body granose, indistinctly nodulose, barely fossulate. Vertex short, small, strongly narrower than one of the eyes, middle feebly carinate, the frontal carinae moderately distinct, narrowly convergent forward, formed anteriorly into a nearly hemispherical margin, not advanced so far as the eyes. Face oblique; frontal costa narrowly sulcate, lightly produced. Eyes globose; ocelli conspicuous and placed between and little before the lower third of the eyes. Antennae very slender, reaching the humeral angles, filiform, consisting of fourteen distinct articles, inserted barely between or just before the ventro-anterior margin of the eyes. Pronotum anteriorly truncate, or little ascendant, produced in a short cylindrical spine, directed upward and forward above the occiput, posteriorly lengthily extended backward beyond the femoral apices and acute, dorsum distinctly flattened, humeral angles strongly obtuse, often with indistinct humero-apical carinae; median carina of pronotum lightly

*The correct spelling of *Scelimena* Serville, is undoubtedly *Scelhymena*, as given by Bolivar, *vide* Ann. Soc. Ent., France, LXX, p. 581, 1901.

compressed, often undulate, subobsolete on the process; posterior angles of the lateral lobes turned downward, the inferior margin before the angle armed with a long cylindrical, acute spine. Elytra oblong, acuminate toward the apices; wings perfectly explicate. Femora entire, distinctly lengthily attenuate; the anterior nearly as long as the middle femora; posterior tibiæ shortened to about three-fourths the length of the corresponding femora, lateral margins strongly dilated toward the apices, first article of the posterior tarsi much longer than the third, the lateral margins widely expanded, the pulvilli very small and subobtusate.

This genus differs from *Scelhyvmena* in the narrower vertex, the raised position of the ocelli and insertion of the antennæ, in the lengthily attenuate legs, and in the turned down posterior angles of the lateral lobes. The spiniform antero-dorsal margin of pronotum is probably only of specific importance. I would therefore include in this genus two species namely: *Amphibotettix longipes*, the type described below, and *Aphibotettix abbotti* Rehn.*

Amphibotettix longipes sp. nov.—Body slender, coarsely granulose, fuscous, posterior femoral margins and ventral surface of body light yellow. Head not at all exserted; vertex narrowed forward, considerably narrower than one of the eyes; eyes globose. Pronotum anteriorly produced in a short, rather blunt spine, nearly vertically elevated, the antero-dorsal margin transversely somewhat tentate, posteriorly the apical process profoundly prolonged backward, slightly more than twice the length of the posterior femora, the apex acute; dorsum between the anterior margin and the shoulders on either side constrictio-sulcate, behind the shoulders shallowly bifossulate, with lightly tumose elevations posteriorly; median carina very little compresso-elevated, undulate, interrupted anteriorly and subobliterated backward on the apical process; humero-apical carinæ dividing off rather narrow indistinct scapular areas; spine of posterior inferior margin of lobes straight and lengthily cylindrical acute, almost transverse or leaning little forward. Elytra elongate, the apex acuminate, surface coarsely granulose, below and toward the apex finely reticulose; wings extended backward nearly to the pronotal apex. Anterior and middle femora extraordinarily slender, the anterior strongly longer than the head; posterior femora very slender, knee very narrow, the antegenicular denticle absent, the genicular spine lightly produced; the pulvilli of posterior tarsi equal in length, the third pulvillus

*Proceedings Acad. Nat. Sciences, Philadelphia, 1904, p. 660.

flattened below. Total length ♀, 26 mm.; pronotum, 25 mm.; posterior femora, 9 mm.; anterior femora, 5 mm.; posterior tibiæ, 6.80 mm.; ♂, 20 mm.; pronotum, 19 mm.; posterior femora, 7 mm.

Eight females and six males from Brunei, Island of Borneo. In my collection.

SECTION METRODORÆ.

PLATYTETTIX gen. nov.

Characters: Body strongly rugoso-reticulate. Head lightly exerted; vertex considerably broader than one of the eyes, tridentate anteriorly, consisting of a denticle on each side, and a minute denticuliform produced median carina. Eyes very small, though slightly prominent; ocelli placed between the lower fourth of the eyes. Frontal costa rather widely sulcate, viewed in profile roundly produced between the antennæ, abruptly sinuate above and below. Antennæ inserted below and before the ventro-anterior part of the eyes. Pronotum anteriorly truncate, posteriorly hastate, the apex acute; median carina of pronotum strongly cristate anteriorly before the shoulders; humeral angles obsolete; posterior angles of the lateral lobes widely laminate outwards, triangularly sub-spiniform produced, obliquely truncate behind. Elytra and wings absent. Legs strongly compresso-carinate; anterior femora strongly carinate above, below acute lobate; middle femoral carinæ sinuate-lobate; posterior femora stout, the antegenicular and genicular spines strongly triangularly produced; first article of the posterior tarsi provided with sub-acute pulvilli.

Platysettix reticulatus sp. nov.—Body short and robust, viewed from above the inferior margins of lateral lobes of pronotum widely dilated backward and acute; grayish-ferrugineous, lightly marked on dorsum with fuscous and also the legs annulated with the same color. Vertex barely more than twice the breadth of one of the eyes. Pronotum with the dorsum strongly compresso elevated anteriorly before the shoulders; median carina gently arcuato-cristate forward to near the front border, and backward abruptly descending between the shoulders; surface on either side of crest and lateral lobes strongly rugose-scabrous; dorsum behind the crest somewhat flattened and profoundly reticulate-scabrous, presenting many little cratiform elevations; the median carina of pronotum here very thin and indistinct; anterior carinæ behind the front

margin abbreviated but distinct ; lateral carinæ of the posterior process very thin, lightly compressed, and minutely serrate, the apex of pronotum produced, little upturned and extended backward to apex of posterior femora.

Total length of body 9 mm.; pronotum 8 mm.; posterior femora 5 mm.

One female from Marcapata, Peru, South America. In my collection.

TRIGONOFEMORA gen. nov.

Characters: Body coarsely granulose, rugose and sparingly tuberculose. Head slightly compresso-elevated ; face subvertical ; antennæ inserted below the ventro-anterior border of the eyes ; ocelli placed between the lower third of eyes, barely visible in profile view ; eyes small, higher than the dorsum and scarcely at all more elevated than the vertex ; vertex anteriorly truncate, broader than one of the eyes, middle lightly carinate forward, on either side between the eyes foveate ; occiput strongly sloping backward ; frontal costa evenly divergent forward but the rami moderately separated. Pronotum distinctly flattened on the dorsum, truncate anteriorly, posteriorly subulate ; median carina of pronotum behind the anterior border often compresso-elevated ; humeral angles laterally prominent, carinate, and obtuse angulate ; the posterior angles of the lateral lobes rather narrowly subrectangularly truncate, the inferior margins very little turned outward ; elytral sinus above shallow, the inferior sinus deeply and angularly incised. Elytra oblong ; wings perfectly explicate. Femora little compressed, elongate, carinæ of anterior femora triquetrous, the external pagina with the oblique rugæ strongly prominent, the carina of the outer face below very pronounced ; femoral and genicular denticles very strongly triangularly produced. First and third articles of the posterior tarsi equal in length.

Trigonofemora fossulatus sp. nov.—Ferruginous above, legs very light green, often mottled below with black. Vertex much wider than one of the eyes, front border truncate and barely advanced so far as the eyes, the anterior carinæ outwardly on each side abruptly curved backward, between the eyes on each side foveate, occiput declivous posteriorly. Pronotum with the dorsum distinctly flattened, strongly widened between the shoulders ; just behind the shoulders deeply bifossulate, posteriorly rugose-scabrous interspersed with tubercles ; median carina of pronotum

close to the anterior margin obsolete, between the sulcations compresso-cristate, but the small crest not elevated above the eyes; on either side of the base of crest presenting a small tumose eminence; posteriorly the median carina becomes interrupted, being undulate-subserulate; anterior carinae behind the front margin abbreviated but distinct. Elytra oblong subacuminate toward the apex; wings perfectly explicate, extended backward little beyond the apex of pronotal process. Posterior femora above strongly carinate, provided with a small secondary denticle just above the strongly prominent femoral lobe; posterior tibiae with both margins sparingly armed with spines; the first articles of the posterior tarsus having the pulvilli of gradually increasing length, from the first to the third.

Total length, 13 mm.; pronotum, 11.5 mm.; posterior femora, 5.5 mm.

One female from Callanga, Peru, S. Am. In my collection.

STENODORSUS gen. nov.

Characters: Body granulose rugulose. Head not exerted or elevated; face little oblique; antennae slender filiform, inserted between the lower part of the eyes; ocelli placed between the middle of the eyes; eyes moderately small, little elevated but not prominent, viewed from above subreniform, in profile conoidal. Vertex anteriorly truncate, subequal in breadth to one of the eyes, middle indistinctly carinate anteriorly; frontal costa narrowly sulcate, the rami almost imperceptibly widening forward to the median ocellus; maxillary palpi slender, the apical article slightly depresso-ampliate. Pronotum anteriorly truncate, posteriorly acute, strongly extended backward beyond the apex of posterior femora; dorsum very narrow between the shoulders, somewhat flattened; humeral angles very widely obtuse, the scapular area clearly defined by the presence of humero-apical carinae; posterior angles of lateral lobes subobtusely rounded. Elytra oblong; wings perfectly explicate. Superior or elytral sinus much shallower than the inferior sinus. Femoral margins subentire; posterior femora slender; genicular and antegenicular denticles small, acute, margins of posterior tarsi minutely serrate and sparingly armed with small spines. First and third articles of posterior tarsi equal in length.

This genus resembles *Allotettix*, but differs from that genus in the narrower body, the insertion of the antennae between the ventral part of the eyes, and the situation of the superior ocelli between the middle of the eyes.

Stenodorsus extenuatus sp. nov.—Ferruginous, sometimes indistinctly infusate. Vertex subequal in breadth to one of the eyes, little narrowed forward, truncate anteriorly, the frontal carina on each side little elevato-curve; behind the frontal carinae provided with little oblong fossæ, occupying the space on each side of the median carina between the anterior half of the eyes. Pronotum with the dorsum flattened or barely convex, very narrow prolongate, provided forward on each side with a large longitudinal ruga; median carina of pronotum percurrent, moderately conspicuous, little elevated; on each side of dorsum forward between the carinae longitudinally bicanaliculate, posteriorly the surface often rugoso-punctulate; forward between the front of shoulders rarely provided with very indistinct abbreviated carina on each side; humero-apical carinae present, dividing off moderately wide scapular areas overlying the shoulders; apical process of pronotum very lengthily extended backward, little longer than the wings, or rarely equal in the male. Elytra oblong, acuminate toward the apex; wings perfectly explicate. Posterior tibiæ narrow, very lightly expanded toward the apices, the apical half little curved outward, the outer margin of the distal third part armed with minute denticles but the inner fifth part unarmed; the third pulvilli of the posterior tarsi equal in length to the first and second articles combined, and flat below. Total length of body ♀, 16 mm.; pronotum, 15 mm.; posterior femora, 6.5 mm. ♂, 14-14.25 mm.; pronotum, 12.5-13.5 mm.; posterior femora, 5.25-5.5 mm.

Numerous specimens in my collection from Marcapata, Peru, South America.

North Carolina Records of Odonata in 1904 and 1905 With Corrections of Some Previous Records.

BY C. S. BRIMLEY.

In the following list all noteworthy North Carolina records of Odonata for the years 1904 and 1905, except the Lake Ellis data,* are included. The specimens were taken by myself unless otherwise stated. Species marked with a star *, have not been previously recorded from the state.

Gomphus sorditus Hagen. Hobton, Sampson Co., one female April 27, 1904. F. Sherman.

Gomphaeschna furcillata Say. Raleigh, April 19, 27, 1904; April 3, 1905.

Basiaeschna janata Say. Raleigh, April 14, 1904, a male and female.

* *Aeschna constricta* Say. Raleigh Nov. 7, 1904, one male.

Macromia taeniolata Ramb. Raleigh, Aug. 9, 1904, one male.

* *Neurocordulia obsoleta* Say. Wilmington, April 5, 1905, G. M. Bentley.

Tetragoneuria cynosura Say. Wilmington, April 5, 1905, one; Wallace, Duplin Co., April 5, 1905, one; G. M. Bentley.

* See p. 81.

Helocordulia selysii Hagen. Wallace, April 4, 1904, R. W. Collett; Southern Pines, March 27, 1905, G. M. Bentley. Both these specimens, which are females, have the triangles of the forewings once crossed, the triangles of the hindwings free, and internal triangles present in both hind wings, but two other specimens, male and female taken at Lumberton, April 7, 1903, have the triangles of both fore and hind wings free from cross veins, and internal triangle absent in both hind wings of female, and present in left, but absent in right, hind wing of male.

Somatochlora tenebrosa Say. Raleigh, Sept. 15, 1904, one female. This specimen, as also a male of the same species taken at Raleigh, July 10, 1903, and a female of *S. filosa* taken at Lumberton, Sept. 6, 1902, have the triangles of both fore and hind wings once crossed.

Mesothemis simplicicollis Say. Cape Hatteras, one taken in July by my brother's little boys.

Libellula flavida Ramb. Lillington, Harnett Co., June 28, 1904, one; Raleigh, Sept. 17, 1904, one.

Libellula cyanea Fab. Lillington, June 28, 1904, one.

Libellula semifasciata Burm. LaGrange, Lenoir Co., Aug. 9, 1904, Sherman; Warsaw, Duplin Co., May 19, 1905, Sherman.

Libellula auripennis Burm. Cape Hatteras, four taken by my brother's little boys in July, 1905; Raleigh, June 5, 1905, one female.

* *Tramea lacerata* Hagen. Wilmington, July 21, 1905, J. W. Spoon, one male.

Pantala flavescens Fab, Raleigh, Sept. 23, 1905, one teneral male.

Lestes forcipatus Rambur. Warsaw, May 19, 1905, Sherman.

Argia bipunctulata Hagen. Lillington, June 28, 1904, one.

Argia apicalis Say. Lillington, June 28, 1904, one.

CORRECTIONS.

1. The female specimen of *Gomphus notatus* recorded previously from Lumberton (ENT. NEWS, May, 1903, p. 151), is not that species, but apparently *Gomphus amnicola* Walsh.

2. The three specimens of *Gomphus parvulus* recorded previously from Lumberton (ENT. NEWS, March, 1904, p. 100), are certainly not that species, but so far as I can make out, *Gomphus abbreviatus* Selys.

3. I am now of the opinion that the specimens of *Libellula axillena*, recorded from Raleigh (ENT. NEWS, May, 1903, March, 1904), are not that form but *L. incesta*. The Beaufort and Lake Ellis specimens are, however, true *axillena*.

Notes on the True Neuroptera.

I.—*Brachynemurus Curriei*, a New Ant Lion from Texas.

By J. F. McCLENDON.

Brachynemurus curriei sp. nov.

Male.—Length 34 mm. Expanse of wings 34 mm. Mottled yellow and fuscous. Occiput yellow at sides, fuscous in the middle. Vertex fuscous with a narrow yellow stripe from eye to eye just behind the antennæ. The antennæ would reach back to the bases of the forewings; they are brown, with yellow rings marking the articulations; basal joint yellow; basal and second joints swollen. Front yellow, fuscous around the bases of the antennæ. Mandibles yellow, tipped with fuscous. Palpi yellow, tipped with fuscous. Pronotum a little longer than broad, tapering anteriorly, fuscous with a median longitudinal yellow band; a few long hairs. Mesothorax mottled yellow and fuscous; a few short hairs. Legs yellow with circular fuscous bands. Tibial spurs reach past three joints of the tarsus. Claws fuscous. Wing veins fuscous, interrupted with yellow. Pterostigma pale. In forewings a fuscous spot two-thirds the way between pterostigma and posterior margin. Abdomen fuscous, hairy. Genital appendages about as long as diameter of abdomen.

Female.—Length, 28 mm. Expanse of wings, 40 mm. Stouter than male. Genital appendages shorter than diameter of abdomen. Other characters as in male.

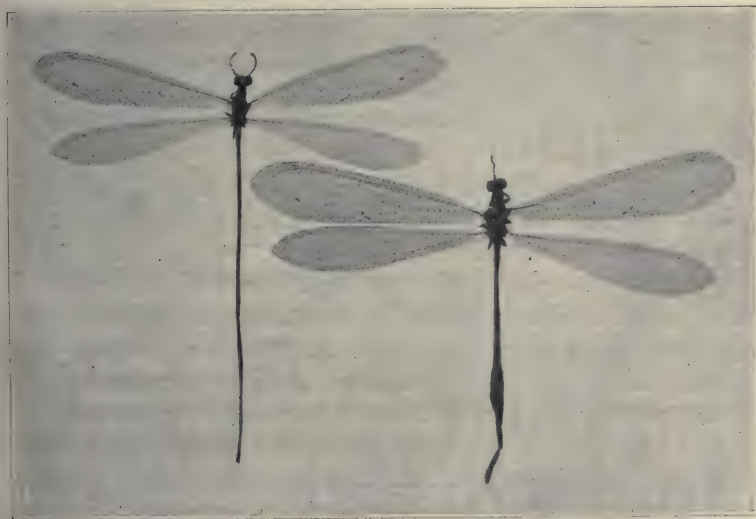


Fig. 1.—*Brachynemurus curriei* n. sp. Male to left and female to right, about $1\frac{1}{2}$ natural size.

Type No. 9725 U. S. National Museum collected by Mr. H. S. Barber, at Brownsville, Texas. Cotypes: two males from Esperanzo, May 20, 1904, and Los Barregos, June 6, 1904, both in vicinity of Brownsville; six females from Brownsville and vicinity, all taken by Mr. Barber.

A Second Species of the Hymenopterous Genus *Odontophyes* Konow (*Xyelinae*).

By JOHN C. BRIDWELL.

Entomological Laboratory, Mass. Agr. Col., Amherst, Mass.

Odontophyes ferruginea n. sp.

♀. 11.5 mm. Length of wing, 12 mm. Dull ferruginous, the following parts more or less infuscated: eyes, indefinite spot over ocelli, a pair of lateral indefinite spots in front of this, anterior lobe of mesonotum, lateral lobes along the sutures and behind, the lateral spot extending over upon the sides of the scutellum, metanotum, basal plate, two large spots upon second dorsal abdominal segment, the five succeeding dorsal segments excepting their lateral and posterior margins, the latter being extended forward with each side into a light spot nearly enclosed by the dark color.

These parts yellowish: basal joint, antennæ and the nine small terminal joints, clypeus and face above to insertion of antennæ, anterior and posterior orbits, labrum, mandibles except apex, the other mouth parts, tegulæ, summits of coxæ, trochanters, anterior and middle femora and tibiæ in front, base and extreme apex of hind femora, basal half of hind tibiæ, hind tibiæ and the venter of the abdomen.

Wings yellowish hyaline, the nervures and stigma brown.

The markings of the thorax and posterior regions of the head are indefinite and the colors run into each other. The bands upon the posterior legs are particularly distinct.

Described from one ♀ specimen in the author's collection taken by him at Baldwin, Kansas, in April, upon the flowers of the early shrub willow.

This species agrees perfectly with Konow's characterization of the genus. From the only species hitherto known *O. aviingrata* Dyar, the ferruginous ground color sufficiently distinguishes it, Dr. Dyar's species being described as steel blue. *Odontophyes aviingrata* was described in *Psyche* 8:213, 1898, as a species of *Pleuroneura* and the genus was erected by Konow (Wien. Ent. Zeit. 18:41, 1899) for its reception. Our species must resemble rather closely *Megaxyela major* Cresson, but differs by the generic characters. The genera *Megaxyela*, *Odontophyes* and *Pleuroneura* are very closely related and careful collecting may reveal intermediates.

New Butterflies and Moths With Notes on Some Species.

BY HENRY SKINNER.

Prof. F. H. Snow, of the University of Kansas, sent me a small collection of Lepidoptera, taken last summer at Brownsville, Texas, and on the San Bernardino Ranch in Cochise County, Arizona. *Syssphinx heiligbrodti* Harvey, ♂, Brownsville, Texas, June. The type of this species came from Bostrop Co., Texas. The books and lists generally give Arizona as the locality and omit Texas.

Tolyte brevicrista Dyar, ♂. San Bernardino Ranch, Cochise Co., Ariz., 3750 ft., August. This gives a definite locality for this pretty species.

Gonodonta pyrgo Cramer. Brownsville, Texas, June. A single specimen agrees fairly well with Cramer's figure.

Rhescipha snowi n. sp. ♀? Exp. 40 mm.? Head, antennæ, palpi, thorax, lower half of fore femora and tibiæ light brown; underside of thorax, middle and hind legs white. Primaries light brown and, under a lense, irrorate with minute dark brown dots; a brown dot in the cell. There is an indistinct brown shade extending into the wing from the outer angle. Secondaries a lighter shade of brown (fawn) and immaculate, with upper side of abdomen same color as secondaries. The specimen is fresh, but the tips of the wings are damaged.

Described from a single specimen taken at Brownsville, Texas, June. This is a new genus to our fauna, and so far as I am aware the second species known.

Ruscino arida n. sp. Exp. 26 mm. Head, thorax and abdomen yellow; antennæ and legs fuscous. Primaries crossed by four fasciæ; the basal one black and 4 mm. wide; the second yellow and 3 mm. wide; the third black and 3.5 mm. wide; the fourth yellow and lunate, 2 mm. wide; this fascia does not reach the costa or outer margin, which is black. Secondaries yellow with a black border 4 mm. in width.

The species in this genus appear to be of doubtful value, and it will take larger series or breeding to diminish them. This is apparently the first record for this genus in the United States, and it was this fact that made it seem advisable to describe the species. It is related to *R. prusias* Druce, and is described from one specimen taken by Prof. F. H. Snow at San Bernardino Ranch, Cochise Co., Ariz., 3,750 ft., August.

Cosmosoma rubrigutta n. sp. Exp. 40 mm. Wings hyaline; antennæ black; head black with blue scales on top; collar and patagiæ orange; thorax black with blue spots; abdomen black with three metallic blue spots on the segments, arranged in a triangle; legs fuscous. Primaries as in *auge*, except that the costa, base and interior margins are orange; there is also an orange spot at the end of the cell, surrounded with black; this spot is 2 mm. in length. Secondaries, basal half orange, outer part black.

C. impar Walk. Biol. Cent.-Amer. Het. iii, pl. 71, f. 22, looks very much like this species except in relation to base of the secondaries and the discal spot.

Described from one specimen taken by Prof. F. H. Snow at Douglas, Arizona, August.

Pyrgus occidentalis n. sp.

This is a smaller and generally whiter species than *tessellata* Scudder, and is found in the Northwest territory and in the southwest generally. I hope to give figures of this form in the near future. Prof. Snow sent me specimens from San Bernardino Ranch, Cochise Co., Arizona, August, and Brownsville, Texas.

There has been a terrific mix up in the literature in regard to *tessellata* Scud., *syrichtus* Fab., and *montivagus* Reak. All authors have them incorrectly placed. *Tessellatus* and *syrichtus* are abundantly distinct and *montivagus* is a synonym of *syrichtus*.

Description of American Moths of the Genus *Cerostoma*.

BY AUGUST BUSCK.

U. S. National Museum, Washington, D. C.

The genus *Cerostoma* Latreille, of which many species are common in Europe, has not yet been recorded from and probably is not found in eastern United States, but is evidently amply represented in the West.

In a revision of the genus and its near allies (Journ. N. Y. Ent. Soc. ix, p. 45, 1903) the writer recorded eleven species from the West and Southwest, and I am now able to add four more striking forms to the known species of this pretty group of Microlepidoptera.

The known American species may be separated by the following table, which is merely my former synopsis, amplified to include the additional species :

Forewings with round second discal dot	1.
Forewings without such dot	2.
1. With blackish streak above the fold	<i>aleutianella</i> Beut.
Without such streak	<i>unicipunctella</i> Busck.
2. With longitudinal black streaks.	3.
Without longitudinal black streaks	7.
3. With continuous black streaks from base to tip	4.
Without such streak	5.
4. Black central streak edged with white dorsally	<i>flavistrigella</i> n. sp.
Forewings without white streak	<i>schwarziella</i> Busck.
5. Ground color pure white	<i>striatella</i> Busck.
Ground color not white	6.
6. Head ochreous	<i>manella</i> Busck.
Head black and white	<i>barberella</i> Busck.
7. Head pure white	8.
Head not pure white	9.
8. Forewings with strong well defined markings	<i>angelicella</i> Busck.
Forewings without such markings	<i>vintrella</i> n. sp.
9. Apex of forewings cupreous	<i>undulatella</i> n. sp.
Apex not cupreous	10.
10. Ground color ochreous white	<i>maculatella</i> n. sp.
Ground color not white	11.
11. Alar expanse less than 19 mm.	12.
Alar expanse more than 21 mm.	13.
12. Membrane between veins 11 and 12 in forewings thickened.	<i>radiatella</i> Don.
Membrane not thickened	<i>rubrella</i> Dyar.
13. Forewings light olive brown	<i>olivella</i> Busck.
Forewing dark purplish brown	<i>arizonella</i> Busck.

***Cerostoma flavistrigella* sp. nov.**

Antennæ dark fuscous without color annulations. Labial palpi whitish ochreous, finely mottled with black. Face and head dirty ochreous, each scale tipped with white, preceded by dark brown. Thorax dark fuscous. Forewing dark fuscous, mottled and streaked with black; especially on the costal half. A continuous black streak from base to apex limits the darker costal half of the wing; below and edging it through its entire length is a broader longitudinal white streak, which, together with the rest of the dorsal part, is more sparsely mottled with black. Hindwings dark fuscous. Abdomen dark fuscous, tarsal joints tipped with ochreous.

Alar expanse, 22-24 mm.

Hab.—Coso Valley, California (Koebele coll.) May, U. S. N. M. type No. 9806.

Closely allied to *C. barberella*, but at once distinguished from all described American species by the central longitudinal white streak.

***Cerostoma maculatella* sp. nov.**

Antennæ white, sharply annulated with dark brown except on basal fourth. Labial palpi white. Face white. Head and thorax ochreous white. Forewings ochreous white; basal half of costal edge ochreous fuscous. From the base runs a broad, dark, ochreous fuscous band outwards below the fold, touching the dorsal edge and then curving upwards to the fold. At the end of the cell is a large, oblong, pronounced, dark fuscous spot, produced into a still larger paler ochreous patch, which covers most of the apical third of the wing and emits three dark fingers to the costal edge. Hind wings paler fuscous. Abdomen ochreous white. Legs white, mottled with black exteriorly.

Alar expanse, 20-22 mm.

Hab.—Bright Angel, Arizona (Barber coll.) May, U. S. N. M. type No. 9807.

This species is nearest to *C. angelicella*, and quite similar though not identical in design, but differs in the dingy ground color and the more diffused and darker markings.

***Cerostoma vintrella* sp. nov.**

Antennæ white with sharp prominent dark brown annulations. Labial palpi white. Face, head and thorax pure white, patagium ochreous. Forewings white with indistinct and ill-defined, light ochreous fuscous markings; the most persistent of these are a central longitudinal row of three large oblong spots, more or less connected by single dark scales, and a series of equidistant costal, apical and dorsal spots around the edge of the apical third of the wing. There are also two ochreous fuscous costal spots, one at basal third and one at the middle of the wing, and two or more dorsal spots, but none of these markings are very constant and in even slightly worn specimens they are all more or less obliterated, so that the wing appears nearly immaculate or merely dusted with dark scales. Hindwings light gray. Abdomen dark fuscous. Legs white.

Alar expanse, 17-22 mm.

Hab.—Colorado Canon, Arizona, 2300 feet alt. (Barber coll.) May. U. S. N. M. type No. 9808.

Nearest, on account of the white color, to *C. striatella*, but very different from that and all other described American species.

***Cerostoma undulatella* sp. nov.**

Antennæ light fuscous with indistinct darker annulations. Labial palpi white, dusted with black. Face, head and thorax bluish white minutely dusted with black atoms, each scale being white with dark lines. Forewings bluish silvery white, densely overlaid with black and brown in ill-defined wavy transverse lines. Each white scale is tipped with black. The apical part of the wing is strongly cupreous brown, especially around the edge. Cilia bluish white, dusted with black. Hindwing light fuscous. Abdomen silvery fuscous. Legs white dusted with black; tarsal joints black, tipped with ochreous.

Alar expanse, 20 mm.

Hab.—Williams, Arizona (Barber) July. U. S. N. M. type No. 9809.

Very distinct from all the known American species of *Cerostoma* and at once recognized by the wavy color effect and the cupreous wingtips.

A SUGGESTION TO COLLECTORS ON THE SOUTHEASTERN COASTS OF THE UNITED STATES.—Recent study of *Erythrodiplax berenice* Drury (also known as *Micrathyria* or *Diplax berenice*) and of Hagen's *Dythemis naeva* make it probable that these two Odonates grade into each other as subspecies in the sense of the Code of the American Ornithologists' Union. *Berenice* has been found on the coast from Massachusetts to North Carolina, *naeva* in southern Florida, the Bahamas, Cuba, Guatemala and Panama. Intermediates occur in Texas and Mexico. Of Odonata from the coasts of South Carolina, Georgia, northern Florida and the Gulf nothing is known. Anyone familiar with *berenice*, visiting these last-named localities, would do well to gather a large series of any forms which appeared to resemble *berenice* and so shed some light on the relation suggested above.—PHILIP P. CALVERT.

EDITOR ENTOMOLOGICAL NEWS.—I noticed in the Notes and News of the June (1905) NEWS your report of the capture of *Pyrargus centaureæ* at Iona, N. J., which is, as you state, "apparently the first record for *centaureæ* south of the Orange Mountains." So much attention is now being given to the making of local lists, and the determination of the geographic range of each species, that the records which I am able to add to yours will doubtless be of interest. Though not as far south as Iona these localities are all farther south than the Orange Mts. The following captures were made during May, 1904, on the dates and at the places specified: 3d, one ♂ *centaureæ*, Millersville, Lancaster Co., Pa.; 7th, one ♀ *centaureæ*, York Furnace, Lancaster, Pa.; 8th, one ♂ *centaureæ*, Peque Creek, four miles from Millersville; 14th, one ♂ *centaureæ*, Welch Mts., near New Holland, Pa.; 15th, one ♂, one ♀ *centaureæ*, Tucquan, Pa.; 21st, two ♂, three ♀ *centaureæ*, Tucquan, Pa.—JOHN H. COOK.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., MARCH, 1906.

More than sixteen years ago, when the first number of the NEWS appeared, we had sixteen pages and no illustrations. This number contains thirty-six pages of reading matter, two pages of exchanges and two pages of advertisements and the cover.

The growth of the NEWS has been steady and healthful, and we sincerely hope it may be able to maintain its present size and gradually increase to a fifty page monthly. We have received more praise than condemnation, therefore we have succeeded. We have not pleased everybody, but we are reconciled when we remember that the most clubs are found under the best apple trees.

With the aid of our many friends and subscribers we hope to grow and improve and become the greatest journal of entomology in the world. From now on we will publish not less than thirty-six pages monthly.

THE RECENT meeting of the Association of Economic Entomologists in New Orleans was a very successful one, over thirty members being present. About thirty very interesting papers were read. The next meeting will be held next winter in New York City, in conjunction with the A. A. A. S. The following officers were elected for the ensuing year: President, A. H. Kirkland, Malden, Mass.; 1st Vice-President, W. E. Britton, New Haven, Conn.; 2nd Vice-President, H. A. Morgan, Knoxville, Tenn.; Secretary-Treasurer, A. F. Burgess, Columbus, Ohio. For member Committee on Nomenclature to serve three years, Herbert Osborn, Columbus, Ohio. For members Council A. A. A. S.: H. E. Summers, Ames, Iowa; E. A. Schwarz, Washington, D. C.—H. E. SUMMERS, *Retiring Secretary*, A. E. E.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

A CORRECTION.—In a short article published in the ENTOMOLOGICAL NEWS for February, 1905, I stated that *Piodes coriacea* Lec. had been found in the Province of Quebec. I regret to say that this statement is not correct; I should have said *Pachyla rugipennis* Newm. I was led astray by Abbé Provancher in his "Additions aux Coleopteres de la Province de Quebec," 1878, page 14, where he describes *P. rugipennis* under the name of *Piodes coriacea*.—G. CHAGNON.

EUBAPHE OSTENTA Hy. Edw. was described from one male taken at Prescott, Arizona. This species was so abundant at light in Carr Canyon, Huachuca Mts., Cochise Co., Ariz., during August as to be a nuisance. It fluttered around the lamp in such numbers as to interfere with the collecting of other species, and it was necessary from time to time to clear the table of the dead and fallen. The bright crimson and black secondaries make it a conspicuous object. I generally spoke of it as the red-light nuisance to my host, Mr. Biederman.—HENRY SKINNER.

MR. RENE OBERTHUR has been collecting the overwintering nest of *Euproctis chrysorrhoea* to send to Boston in order that parasites may possibly be reared from them to assist the New England people in their fight against the brown-tail moth. Mr. Oberthur's collectors have aroused much interest in some of the country regions in France. The newspaper in a small town comments upon the arrival at the hotel of a stranger of fine appearance and decorated, who announced that he was willing to buy the nests of caterpillars. Soon large sacks of caterpillar nests were brought in by the farming people, were packed in large boxes and sent to Rennes. The object of this purchase was not announced, but the people did some guessing. One man suggested that they were intended to make silk to replace that imported from China, since the Japanese, now having control of China, did not wish to sell any more silk to France; another person suggested that the object was to rear the caterpillars in order to extract the diamonds from the heads of some of them since it is a well-known fact that occasionally a caterpillar is found with a diamond in its head; a third countryman suggested that the object was to remove the nests from the caterpillars and use them in filtering the city water of Rennes. The editor of the newspaper, with an eye to business, gives these three theories and promises his readers that if they will look in the next Sunday's edition he will give them the true use of these nests.—L. O. HOWARD.

Doings of Societies.

A meeting of the American Entomological Society was held June 22d, 1905, Dr. P. P. Calvert, President, in the chair. Nine persons were present.

Mr. Daecke reported taking fifteen specimens of *Chrysops fallax* at Winona, N. J., on June 22d. He spoke of the value

of differentiating the species of *Chrysops* by a study of the eyes. Mr. Rehn said he had been making a study of crickets from Costa Rica of the family Trigonidiinæ, genera *Anaxiphia* and *Falcicula*, and had found still another genus which was new. These generic differences were elucidated. Dr. Skinner exhibited *Megathymus polingi* and *Heteropia melon arizonensis*, new butterflies.

Dr. Calvert spoke of the *Æshninæ* the largest of dragonflies and particularly of the genus *Gynacantha*. Its northern range is Florida, and it is found in both the Old and New worlds. Some of the species are crepuscular. The comparative anatomy of the genus and its allies was discussed.

HENRY SKINNER, *Secretary*.

At the meeting of the Feldman Collecting Social held January 17, 1906, at the residence of Mr. H. W. Wenzel, 1523 S. 13th Street, Philadelphia, ten members were present, and Mr. F. Haimbach, Jr., visitor.

The President, Mr. E. Daecke, read his annual address, which was ordered entered upon the minutes. The Treasurer's report was read and ordered filed. The Secretary's verbal report was accepted. The following officers were elected to serve for the year 1906: *President*, E. Daecke; *Vice-President*, C. Few Seiss; *Secretary*, Frank Haimbach; *Treasurer*, H. W. Wenzel.

Mr. Huntington exhibited a photograph colored by Japanese-Photo Water Color Co.

Mr. Laurent reported finding at least 1000 egg masses of *Tenodera sinensis* at Mt. Airy, Philadelphia, during the past fall, and suggested that the species should be common this coming season.

Mr. Wenzel dwelt upon the chances of insect life after a severe winter as compared with a mild one, and spoke of the work of field mice destroying a vast number of insects during the winter of 1904-1905. This was discussed by the members. Adjourned.

FRANK HAIMBACH, *Secretary*.

A meeting of the American Entomological Society was held April 27, 1905, Dr. Philip P. Calvert in the chair. Thirteen persons were present. The President announced the deaths of Dr. Henri de Saussure on February 20th, elected a corresponding member of the Society January 15, 1866, and of F. M. Brauer, who died December 29, 1904, elected a corresponding member October 28, 1897. Letters were read from Brunner von Wattenwyl, Ignacio Bolivar and Nicolas Adelung thanking the Society for having elected them corresponding members.

Mr. Laurent said he had observed a specimen of *Vanessa antiopa* on the stairway of his carriage house on Christmas day and it remained there until Feb. 17th. Dr. Calvert spoke of the Odonata collected by Mr. E. B. Williamson in Guatemala and sent to him for study. Two thousand seven hundred specimens were collected in two months.

Mr. Weigand spoke of his success in sugaring for moths on Holly Beach, New Jersey. Taking two hundred specimens in one night was not unusual.

Mr. Snyder asked if the issuing of Hymenoptera during the warm fall days has any effect in decreasing the spring brood. Discussed by the members.

HENRY SKINNER, *Secretary*.

A meeting of the Entomological Section of the Academy of Natural Sciences, of Philadelphia, was held May 25, 1905. Mr. Philip Laurent, Director, presiding. Twelve persons were present. Dr. Skinner exhibited Syntomidæ from Venezuela, which mimic Hymenoptera in a wonderful manner. Some large Cicadas from Burma and the pretty moth *Coptodisca splendoriferella*, the latter raised from cocoons taken by Mr. Edward Potts, Media, Pa., were also shown.

Mr. Daecke called attention to the value of Canada balsam for mounting small insects as they do not shell off as they do when glue is used.

Mr. Rehn spoke of his studies of South American Truxalinae Hylopteriges. Americans use the genus *Truxalis* and the Europeans *Metaleptia*. The question of the generic syno-

nymy of species described by Giglio-Tos and Bruner was discussed by the speaker and his own views given. Mr. Daecke exhibited an Odonate new to the New Jersey list. The species was *Gomphus brevis* and was taken at Brown's Mills Junction, May 21st. He also said *Baïæschna janata* was uncommon in collections, but not in the pine barrens of New Jersey.

Mr. Haimbach exhibited a box containing the Micro-lepidoptera he had taken during the year, representing forty-four species.

Dr. Calvert exhibited carbon tetrachloride and gave some to the members to try as an insecticide. It is less inflammable than carbon bisulphide and of a pleasanter odor.

Mr. Haimbach reported having received *Catopsilia philea* from Kirkwood, Georgia.

HENRY SKINNER, *Recorder.*

The fifteenth regular meeting of the Pacific Coast Entomological Society was held on February 25, 1905, at the California Academy of Sciences. President Fuchs in the chair. Eleven members were present. Two new members were elected.

Mr. F. W. Nunenmacher exhibited a series of *Hippodamia sinuata* and *americana*; the specimens showed that the two species intergrade, the markings forming a continuous series; all were collected in Alameda County, California; also the following: *Coccidula scutellata* (Berlin), *C. rufa* (Berlin), *C. lepida* (New York), *C. occidentalis* (Cazaville, Quebec), *Adalia bipunctata* (Massachusetts), *A. ludovicæ* (W. T.), *A. frigida* var. *ophthalmica* (Siskiyou Co.), *A. humeralis* (Tulare Co.).

Dr. F. E. Blaisdell reported the welfare of three larvæ of *Omus ambiguus* that had been brought from Mt. Shasta by Mr. Beverly Letcher. They fed on flies and appeared more sluggish and did not hibernate like the larvæ of *O. sequoiarum* previously reported. He also spoke upon several forms of *Blapstinus*, e. g., that he was inclined to refer the species collected at Mokelumne Hill, Calaveras County, California, to *inquisitus*, as the two sexes were about alike in form, although the legs were reddish and not dark as in the Truckee form; a

species taken at San Francisco he referred to *fuliginosus*, and those taken in Contra Costa County to *elongatus*.

Dr. E. C. Van Dyke thought that each member of the Society should specialize upon some group or order of insects. He also spoke upon the life histories of insects, especially the Carabidæ, and the need of such work.

Mr. Edw. Ehrhorn also thought it the proper thing for each member to take up some particular group and referred to the myriads of small things to be found everywhere.

Dr. Blaisdell exhibited *Eleodes rileyi*.

Mr. F. X. Williams the following variations in Lepidoptera: 4 *Chrysophanus gorgon*, *Pyrameis mulleri* ♂, *Anthocharis ausoniades* ♀, 3 *Melitæa chalcidon*—one with a simple row of submarginal yellow spots, another with a whitish discal cell, spring and summer forms, the latter more than twice as large as the former.

The sixteenth regular quarterly meeting of the Pacific Coast Entomological Society was the annual field day, and was held at Fairfax, Marin County, California, on June 11, 1905. Nine members and nine guests participated in the outing. Many good things were taken. Mr. F. W. Nunenmacher obtained two specimens of a blind Tenebrionide,* which is undoubtedly a new and remarkable species and will necessitate the creation of a new genus for its reception. It probably represents a new tribe near the Scaurini. This makes the third species of blind Tenebrionidæ from California—*Alaudes singularis* and *Typhlusedrus singularis* being the other two species. *Purpuricenus dimidiata* and *Oberea quadricallousa* were also taken. The weather was too dry for fine collecting.

The seventeenth regular meeting of the Pacific Coast Entomological Society was held on August 26, 1905, at the residence of Dr. F. E. Blaisdell, President Fuchs in the chair. Ten members and ten guests were present. President Fuchs read the following notice:

Members of the Pacific Coast Ent. Soc.

With sincere regret I have to announce the death of Mr.

* See p. 76.

Beverly Letcher. He passed away in San Francisco, July 17, 1905, at the age of 41 years. Born in San Francisco, California. With him were lost not only a good honest friend, but also an excellent entomologist of bright ideas and deep observations in general entomology. His specialty was Lepidoptera. I beg all present to rise and pay to our good friend our sincerest esteem. I suggest that the Society draw up a set of resolutions, showing our regard for him and that a copy be presented to his mother, Mrs. Anna Letcher.

The following committee was appointed to draw up the resolutions: Dr. E. C. Van Dyke, James Cottle and Dr. F. E. Blaisdell.

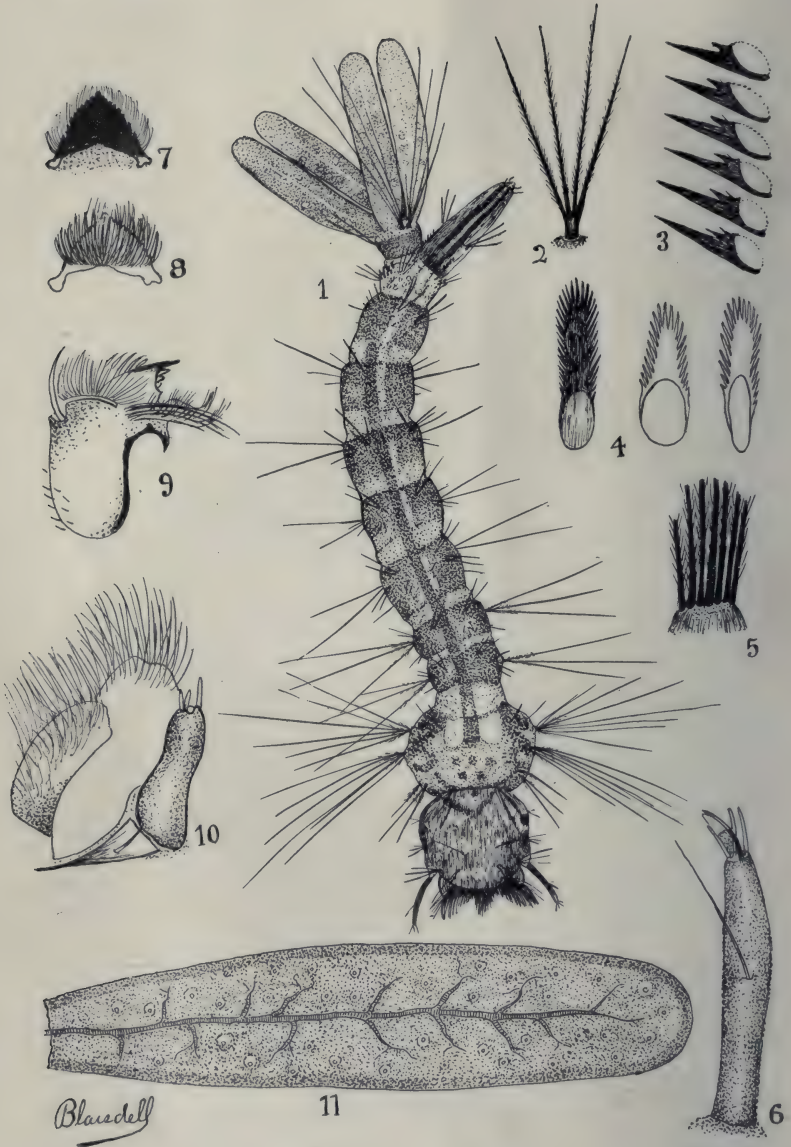
Dr. E. C. Van Dyke then reported "A Month's Outing in Washington." He briefly considered the comparative geography of Oregon and Washington, stating that he visited Monroe, Tacoma, Paradise Park (Rainier) and Mt. Shasta. He spoke of the general conditions in the two States, giving a review of the geology past and present. He also considered the flora and fauna.

He gave the results of his collecting at Monroe, in the forest and clearing, along streams and in the open swampy places; collecting at Paradise Park was then taken up, with results in collecting along the streams, on flowers, trees, on ice fields and about tents, with the report of taking *Cicindela depressula*; *Nebrias* on ground and under logs. He stated that he recognized two faunas in Eastern Washington.

Mr. James Cottle gave a report of his summer's outing (July 17th to 31st) at Anderson Springs, Lake County, California, stating that he caught many *Catocala* as follows: *aholibah*, *pura*, *faustina*, *californica*, *cleopatra*, *ophelia*, *violenta*, *zoe* and what is undoubtedly a new species.

Mr. J. C. Huguenin gave an account of his outing in the Yosemite National Park in the early part of July. At Wanona, Mariposa County, he took *Omus hornii*. In the Yosemite Valley he took *Carabus tædatus* var., *Pterostichus morionides* and *Eleodes scabricula*, *parvicollis* var. and *consobrina* var. It proved too early for Lepidoptera.

F. E. BLAISDELL, M.D., *Secretary*.



CULEX VARIPALPUS coq.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

APRIL, 1906.

No. 4.

CONTENTS:

Blaisdell—Notes and descriptions of the larva of <i>Culex varipalpus</i> Coq.	107	Britton—Some new or little known Aleyrodidae from Connecticut—II	127
Coquillett—A new <i>Culex</i> near <i>curriei</i>	109	Slingerland—Formaldehyde as an insecticide.	130
Skinner—On Dr. Dyar's Review of the Hesperidae	110	Williamson—Dragonflies (<i>Odonata</i>) collected by Dr. D. A. Atkinson in Newfoundland, with notes on some species of <i>Somatochlora</i>	133
Riley—A Malpighian tube within the heart	113	Johnson—An emergency case in insect architecture	139
Houghton—Notes on <i>Cænocara oculata</i> Say	114	Editorial	140
McClendon—Notes on the true Neuroptera	116	Doings of Societies	141
Howard—An interesting new genus and species of Encyrtidae	121		
Aldrich—The Dipterous genus <i>Calotarsa</i> , with one new species.	123		

Notes and Description of the Larva of *Culex varipalpus* Coq.

BY F. E. BLAISDELL.

(Plate III)

At the 14th meeting of the Pacific Coast Entomological Society (ENT. NEWS, Vol. XVI, No. 3, p. 96, I reported the finding of an interesting *Culex* larva in Contra Costa Co., Calif. Imagines subsequently bred from the larva were submitted to Prof. Coquillett, who pronounced the species *Culex varipalpus*.

The larvae are remarkable for their elongate form, large anal branchiæ and sluggish, awkward movements. All of the larvae of this species that I have seen were taken from a hole in a sycamore tree; for the last three years they have been abundant, from July to January, when there was sufficient rain to keep water in the hole.

The largest larvæ (Fig. 1 of Plate) are 7 to 8 mm. in length, including the siphon, and nearly six times longer than the width of the prothorax. Color is yellowish to a dirty

white, anal siphon more or less black, head ferrugineous with sutures ventrally and spots laterally piceous.

The head is subquadrate, narrower than the prothorax, slightly wider than the abdominal segments, comparatively small in the younger larvae, widest at or just back of the eyes, tempora scarcely at all subangulate, the frontal surface quite evenly and moderately convex. The antennae (Fig. 6) are more or less piceous, usually whitish beneath, slightly more than one-half as long as the head, very feebly arcuate, cylindrical, slightly and gradually narrowing at apex, and terminating in a small colorless, pointed segment; laterally at middle is a long seta.

The mandible (Fig. 9) and palpus (Fig. 10) are sufficiently characterized by the figures. The mentum (Figs. 7 and 8) is triangular with the sides slightly arcuate, and finely subdenticulo-crenulate, the internal surface (Fig. 8) is clothed with very fine hairs or cilia.

The thorax is transversely oval; at each side there are four or five well-developed tufts of long setae, of which the dorsal two are only given in the figure.

The abdominal segments, 3 to 7, are subequal, segments 1 and 2 are apparently shorter.

The pecten of the eighth segment consists of a patch on each side of the segment, of about 15 to 19 chitinous scales, apparently arranged in two transverse rows; one or two scales may constitute another or third row; the anterior row has 9 or 10 scales, while the posterior some 5 or 6, their line of attachment being just caudad to that of the anterior row, and usually alternating with them; sometimes they are arranged in anterior-posterior series, which is never perfect; each scale is elongate, flattened, with the margins fringed with spines (Fig. 4), the scales vary in form as indicated by the figures.

The anal siphon is about three times as long as wide, apparently shorter in the younger larvæ. The siphonal pecten consists of a single straight series of 13 scales, situated at basal fifth and reaching the base. Each scale (Fig. 3) is very acute, with one to three smaller spines at proximal side of the base.

The anal branchiae are little more than four times longer than wide, and about equal to the 5th, 6th and 7th abdominal segments taken together; each branchia has a median longitudinal trachea with short lateral rami that may divide once or twice; small rounded areas are to be observed scattered sparsely within the branchia, within each circle is a small central circle. The branchia are easily detached.

The setae of the larvae are peculiar, inasmuch as they are clothed with fine hairs. Figure 5 represents the basal part of a thoracic tuft, while figure 2 illustrates a tuft from the eighth segment.

The larvae are fragile, especially in preservative fluids.

In the pupae the respiratory siphons are small and comparatively inconspicuous, while the two anal branchiae are nearly oval, slightly longer than wide, slightly and rather broadly emarginate at apex, with a small, slender seta projecting backwards from the centre of the emargination; margins at sides are minute spinulo-denticulate, at apex minutely spinulose.

As a whole the pupa is slender, the abdomen elongate, and distinctly dorso-ventrally depressed.

A new *Culex* near *curriei*.

By D. W. COQUILLETT.

Culex lativittatus, n. sp.

So very similar to *curriei* that I am unable to detect any difference, except in the stripe of brown scales in the middle of the mesonotum. In the present species this stripe is very broad, covering more than one-fifth of the width of the mesonotum, the borders almost parallel and well marked. In *curriei* this stripe is much narrower, covering less than one-ninth of the width of the mesonotum, its borders not well defined, usually with a narrow line of brown scales on either side of it, but separated by a stripe of yellowish white scales.

Santa Clara and Alameda Counties, California. A large series of both sexes received from Miss Isabel McCracken.

This is evidently the species referred to by Mr. Quayle in the January number of the NEWS, under the name of *curriei*. The latter appears to be a fresh-water species. Mr. Frederick Knab informs me that the larvae of the two forms are very distinct.

On Dr. Dyar's Review of the Hesperidae.

By HENRY SKINNER.

Dr. Dyar has published in the Journal of the New York Entomological Society* A Review of the Hesperidæ of the United States. The value of the paper is greatly impaired by the lack of sub-family definitions, and it is impossible for anyone not familiar with the sub-families to use the keys to the genera the author gives. Nearly the whole classification of the Hesperidæ is based on the presence or absence of the costal fold, a male secondary sexual character. The females therefore must work out their own salvation. This costal fold appears to be distributed through the family in a most arbitrary way and in closely related species one will have it and the other not. Unfortunately it has not been used in a logical manner for generic separation. The two species, *bathyllus* Abbott & Smith, and *pylades* Scudder, are remarkably close specifically, yet *bathyllus* is the type of *Thorybes* Scudder and *pylades* the type of *Cocceius* Godman & Salvin. *Cocceius* is based on the presence of a costal fold in the male. The logic and the beauty of this is seen from the fact that in the genus *Eudamus*, *simplicius* Stoll has a costal fold while *dorantes* Stoll lacks it. Why are they not different genera? This fact invalidates Dr. Dyar's first key and makes such a classification absurd. The genus *Cogia* Butler is based on another secondary sexual character, the presence of a pencil of hairs near the abdominal fold of the secondaries. The species appear to be more nearly related to species in the other genera as segregated. *Phædinus caicus* Herrich-Schaeffer, *moschus* Edws., is so close specifically to *bathyllus* that they are frequently confounded yet they are placed in different genera. The same may be said of *bathyllus* and *pylades*. The writer does not admit that a single secondary sexual character proves their non-relationship. In passing it is noted that in the Biologia, *caicus* H. S. and *moschus* Edwards, while not specifically separated, are said to differ by the latter being lighter in color, palpi whiter and hyaline spots larger, yet they separate *Pyrrhopyga arizonæ* and *P. araxes*

* Vol. XIII, p. III.

on the same or lesser characters and are followed by Dr. Dyar. Inconsistencies of this character are frequent in the family. Dr. Dyar says there is a costal fold in *Murgaria* (*Eudamus*) *coyote* Skinner and places it as a synonym of *albociliata* Mabilie. Godman and Salvin place one species, *albociliata*, in *Murgaria* and say it does not have a costal fold. If we logically follow out the significance of this we have a single species in two genera. This is by no means unusual in "up-to-date genera" as we see the same thing in Bull. 52 U. S. N. M. But as my knowledge of genera is only "an opinionated attempt to discredit them" I can't be expected to follow such fine points of modern scientific classification.

On page 114 there are seven genera with eleven species. This comes pretty close to one apiece. *Montivaga* Reak. is placed in the genus *Pyrgus* Hubner and *syrichtus* Fab. in the genus *Heliopetes* Billberg. Dr. Dyar says *syrichtus* falls in *Heliopetes* on the presence of a hair pencil on the hind tibiae. This is most extraordinary, as *syrichtus* and *montivaga* are one species. *Hylephila phylæus* and *Polites coras* Cram. (*peckius* Kirby) certainly look lonely. It may be mentioned here that thirty-five years ago Mr. Scudder erected many genera of the Hesperidæ without descriptions. They were only indicated by specific types. There were about thirty in all. These have been stumbling blocks and our Hesperid genera will be in a chaotic condition until they are thoroughly studied. Dr. Dyar has recognized practically all of them, and this has been the cause of much confusion, as shown by his Revision. To one knowing the species it can be said, without fear of contradiction, that in the Pamphilinæ the species in given genera are more nearly related to species in other genera than they are to each other. This would not be so bad if the genera would hold irrespective of natural relationship. *Catia* has a single species, *otho*, and *Thymelicus* twenty, and these twenty will show greater variation in slight differences among themselves than they do from the lonely segregated one. Those under *Erynnis* show a sad mixture and would make five or six genera of equal value to those used. For example compare *leonardus* and *morrisonii*; *juba* and *metea*. In *Ochlodes* compare

snowi and *verus*, *nemorum* and *sassacus*. *Atrytonopsis hianna* and *Lerodea loammi* are so close specifically that they may be topomorphs, yet they are placed in widely separated genera. *A. python* Edws. should not be placed where it is. Compare *fusca* and *textor* in the genus *Stomyles*. The association of *scudderi* and *aaroni* may go in an "up-to-date classification," but nature would never recognize it.

Maculata and *eufala* would never agree to being associated in *Lerodes* if they knew it. The same theory applies to *arpa*, *palatka*, *byssus*, *dion* in relation to *yehl* and *pontiac*. The species under *Prenes* are closely related. *Padraona dara* Kollar is the same species as *omaha* Edw. *Omaha* is the type of *Potanthus* Scudder (1872). *Padraona* Moore (1881). Dr. Dyar says *Megathymus cofaqui* Strecker and *M. streckeri* Skinner are not well separated. The specimens and the literature prove otherwise. *M. aryxna* Dyar is a synonym of *neumoegeni* Edw. The fig. 3, pl. 69, Biol. Cent. Amer. Het. is not *neumoegeni*, as stated by Dr. Dyar.

Dr. Dyar assumes that I am not familiar with the genera of the Hesperidæ, because I have not used all or many of those proposed. I have not used them because in many cases they are unscientific, illogical and untenable. Dr. Dyar's Revision proves the correctness of my position. I can't logically be held responsible for not proposing better ones. When I became interested in the family the species were in great confusion in collections, and I never saw a collection where they were all correctly named. I have named specimens for many years from all over the country and the species is the unit of classification, and a multiplicity of bad genera—a Tower of Babel.

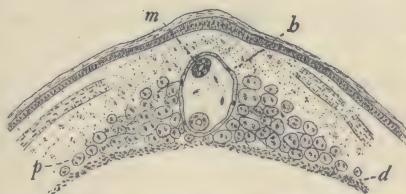
I WISH to report that out of 335 *T. polyphemus* cocoons about 40 had stems. One contained a parasite.—RICHARD KUSCHEL, Chicago, Illinois.

MR. E. P. VAN DUZEE, of the Grosvenor Library, Buffalo, New York, has gone to Jamaica for a few weeks' collecting trip. We may look forward to an increase in our knowledge of the Hemipterous fauna of that island.

A Malpighian Tube Within the Heart.

By WILLIAM A. RILEY, Cornell University.

We are accustomed to variety in the location of the urinary organs of the Arthropoda, but one is a little surprised to find a Malpighian tube within the heart. And yet such a condition sometimes occurs among the insects. So far as has been found it occurs only in certain Orthoptera. The accompanying illustration from a cross-section of the abdomen of an Acridid, the common *Melanoplus femoratus*, shows two cross-sections of a Malpighian tube within the cavity of the heart. On tracing these it is seen that they do not represent two tubes, but rather a single one which is doubled upon itself.



Cross-section of pericardial region of *Melanoplus femoratus*—*d*, dorsal diaphragm; *p*, pericardial cells; *m*, malpighian tube; *b*, heart.

Aside from a brief incidental mention by Kowalevsky, 1894,* this condition seems to have escaped notice. In studying the heart of *Pachytilus* this worker was surprised to find in the middle region of the abdomen, Malpighian tubes within the cavity of the heart. Supposing, at first that it was a pathological condition, he studied the same region of the heart of *Locusta viridissima* and found exactly the same condition. In this species, it was easy to recognize that the Malpighian tube reached the heart by way of the cardio-coelomic aperture, and that after a tortuous course it passed through the cardio-pericardial aperture into the pericardial chamber. Later, he found the same condition in the nymph of an undetermined Locustid.

As a result of his studies, Kowalevsky reached the conclusion that this condition was not pathological but perfectly normal for the Acrididae and Locustidae. He sought to explain the strange phenomenon as a case of physiological attraction. In most animals,—Molluscs, Vertebrates, Crustaceans,

* Kowalevsky, A. 1894. Etudes sur le cœur de quelques Orthopteres. Communication preliminaire. Arch. Zool. exp. 3 ser. t. 2 pp., 485-490.

—the acid and alkali-eliminating organs (distinguished respectively by their ability to take up carmine, or indigo-carmin) are united into one. Thus we have the urinary tubules and the Malpighian corpuscles in the kidney of the Vertebrates; the urinary canals and the peripheral saccules in the decapod Crustaceans; the pericardial glands and the organs of Bojanus in the Lamellibranchs. In the insects, however, we have these organs, represented respectively by the pericardial cells and the Malpighian tubes, entirely separate. Kowalevsky concludes that "there thus results a certain physiological attraction between the organs, which leads to the penetration of the Malpighian tubes into the region occupied by the acid-eliminating part of the kidney, that is to say, into the region of the pericardial cells."

I have studied a number of series of adults of *Melanoplus femoratus* and of both adults and nymphs of *Melanoplus femurrubrum* but have observed the phenomenon in only the one individual. In addition, I have examined series of *Chortophaga* (nymph and adult), *Ecanthus*, *Gryllus*, and *Blatta*, but have met with no further instance. The Orthoptera possess from thirty to a hundred and fifty Malpighian tubes and yet of all these Kowalevsky found but a single one within the heart of any individual. If we have in the phenomenon a perfectly normal case of physiological attraction, why does it affect but a single tube, or how account for the fact that it has never been observed in any other order of insects? The condition is an interesting one, but the evidence certainly goes to show that it is a purely accidental one. Whether it is merely mechanical, brought about by the movements of the insect, or whether it is an abnormal method of growth, is a question.

Notes on *Caenocara Oculata* Say.

By C. O. HOUGHTON, Newark, Del.

In his "Revision of the Ptinidae of Boreal America," recently published, Mr. H. C. Fall writes, in part, of the genus *Caenocara* as follows: "The species of this genus, or at least some of them, are known to pass the larval state in puff balls (*Lyc-*

perdon). The perfect insects are found for the most part on oak foliage." On Sept. 26 last, Mr. H. S. Jackson, Asst. Mycologist of the Delaware Station, brought me a specimen of a species of *Scleroderma* which he had taken in an open grove made up rather largely of oak trees. A slight cut which had been made in the *Scleroderma* revealed the presence within of numerous small, white coleopterous larvae in their cells. I placed the specimen, which measured about one and one-half inches in diameter, in a glass dish, which was covered with a small pane of glass, and set it aside in my laboratory to await developments. One larval cell, which was opened enough to reveal the presence of a larva within, was examined occasionally, and on October 5th an adult, nearly of normal color, was found within it. This cell, when examined two or three days previous, had contained a pupa, but the exact length of the pupa stage was not determined. On October 12th, I found a number of specimens in the dish, and by partially breaking open the *Scleroderma* several more were secured, making about 25 specimens in all. On October 18th, 44 more specimens were secured, and a few days later a few others, enough to bring the total to 72, were found. An examination of the body of the *Scleroderma* showed that it had been pretty thoroughly worked over by the larvae.

When a number of the adults were inclosed together in a small vial, a very evident stridulation was noticed at times which reminded one somewhat of that made by *Conotrachelus nenuphar* under similar conditions, though weaker, of course.

It may be of interest to note, further, that a few specimens of *C. oculata* have been taken in trap-lanterns at this place.

THE INFALLIBLE ERRS.—The March, 1906, number of The Journal of the New York Entomological Society, edited by Dr. Harrison G. Dyar, page 7, lines 23, 24, gives us *cupracens*, instead of *cuprascens*, as a specific name in *Cicindela*, and on page 51, line 23, Lacépède for Lacépède. Very little experience in proof-reading is required to teach the proof-reader how easy it is to overlook typographical errors, and were it not for certain remarks quoted in the News for December, 1905, page 316, we would not dream of calling attention to these slips in our esteemed contemporary. It is a certain satisfaction, however, to meet with evidence that its Editor is of not altogether different clay from the rest of the entomological fraternity.—ONE OF THE PHILADELPHIANS.

Notes on the True Neuroptera.

J. F. McCLENDON.

2.—On Venation in Neuroptera.

The wings of Neuroptera have been variously treated by systematists, and a few species have been considered by Comstock and Needham in their excellent series of articles in the 32d and 33d volumes of the American Naturalist. In 1901 I commenced to collect material for a developmental and comparative study of the venation of the group, but on account of pressure of other duties, failed to get many pupae, and had to content myself with studying the tracheation of the fully formed wings by bleaching them for days in chlorine water.

In distinguishing the veins, I have used the nomenclature of Redtenbacher as applied by Comstock and Needham.

SIALINA.

The wings of *Sialina* are broad and seemingly irregularly reticulated, but if we leave out of consideration the cross veins, the venation can easily be reduced to the hypothetical type of Comstock and Needham. The anal space of the hind wings is thin and folded when at rest.

SIALIDÆ.

In *Corydalidæ*, Fig. 1, the sub-costa and radius run

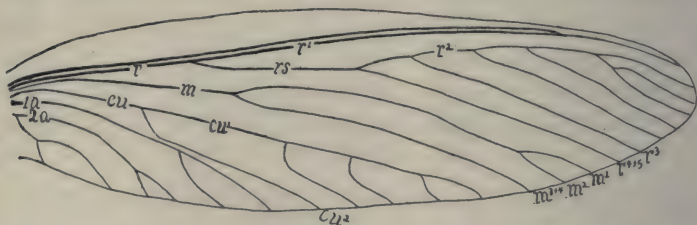


Fig. 1.—*Corydalidæ*. Fore wing. In this as well as in the succeeding figures the cross veins are omitted, save where they are represented by spaced lines.

parallel nearly to the tip of the wing, where they fuse. The radial sector has become pectinate by fusion of r^4 and r^5 , as shown by Comstock and Needham. R^2 has three side branches,

one of which is divided into two. M^3 and m^4 are fused. Cu^1 has three side branches. The first, second, and third anal veins each branch once.

In *Sialis infumata*, Fig. 2, the anterior wing is modified by

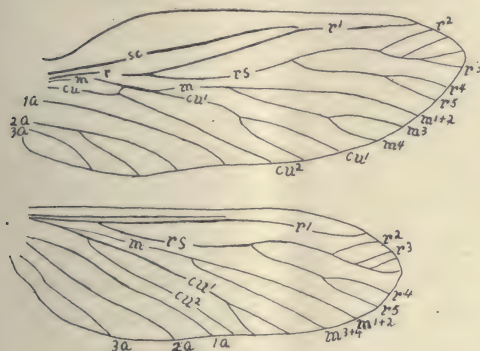


Fig. 2.—*Sialis infumata*.

the fusion of Cu^1 and m for some distance, and associated with this, the radius assumes a bowed form. M^1 and m^2 are fused. In the hind wing the bases of the median and cubitus are fused. M^1 and m^2 are fused. M^3 and m^4 are fused.

RAPHIDIDÆ.

In *Raphidia oblita*, Figs. 3 and 4, the sub-costa reaches the margin of the wing

before the pterostigma. In the anterior wing the radius, media, and Cu^1 are fused for a short distance. In the posterior wing the bases of the radius and media are fused for some distance and Cu fuses with the first anal through the middle third of its course.



Fig. 3.—*Raphidia oblita*. Fore wing.

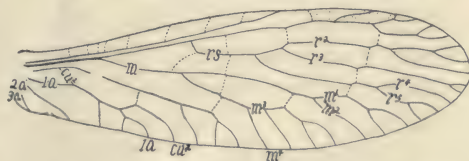


Fig. 4.—*Raphidia oblita*. Hind wing.

HEMEROBINA (MEGALOPTERA).

MYRMELEONIDÆ.

In the *Myrmeleonidæ* we have typical venation save that many accessory veins have been added distally and the branch-

ing of the median has been almost or quite completely suppressed.

In *Ululodes hyalina*, Fig. 5, the sub-costa and radius run parallel to the pterostigma, where they unite. The radial sector is branched dichotomously, though it is functionally

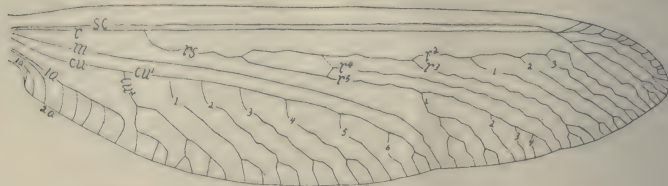


Fig. 5.—*Ululodes (Ulula) hyalina*. Fore wing.

pectinate, R^1 being united to $R^2 + 3$ by a strong cross vein. The media is unbranched. R^1 , r^5 , Cu^1 and the anal furnish numerous veinlets by pectinate branching.

In *Myrmeleon rusticus*, Fig. 6, the number of accessory



Fig. 6.—*Myrmeleon rusticus*. Fore wing.

veins is very much increased, Cu^1 having thirteen branches, each of which subdivides once.

HEMEROBIDÆ.

In the *Hemerobidæ* the radial sector has become pectinate by splitting of $R^1 + 3$ as shown by Comstock and Needham for *Hemerobius*.

In the fore wing of *Micromus posticus*, Fig. 7, the radial sector is suppressed and the radius has become pectinate. Whether this has been caused by fission or coalescence, I have not enough material

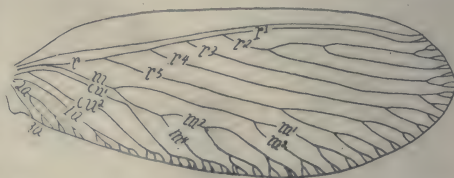


Fig. 7.—*Micromus posticus*. Fore wing.

to decide, but when we compare it with the hind wing, where the radial sector is distinct, we see the magnitude of the change. The cross-vein connecting r^1 with r^4 in the hind wing, Fig. 8, suggests that the change has been brought about by shifting of the trachea from longitudinal to cross veins—many tracheæ are found misplaced in the pupa, and this change might easily occur—the change would then be coalescence and not fission, as can be easily understood by studying the accompanying figures of the fore and hind wings. The sub-costa and r^1 run nearly parallel to the end of the wing.

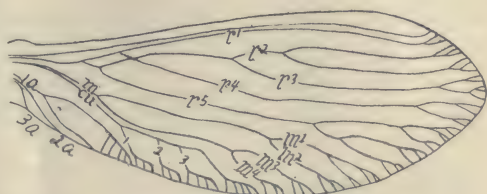


Fig. 8.—*Micromus posticus*. Hind wing.

In *Polystoechotes punctatus*, Fig. 9, R^2 , by pectinate brach-



Fig. 9.—*Polystoechotes punctatus*. Fore wing.

ing, gives rise to fourteen veinlets, each of which subdivides twice. Cu^1 has seven such branches. The sub-costa and r^1 fuse at the pterostigma and give rise to fifteen such veinlets.

MANTISPIDÆ.

In *Mantispa interrupta*, Figs. 10 and 11, the sub-costa runs through the middle of the pterostigma for the last third of its course, and disappears near its end. The base of

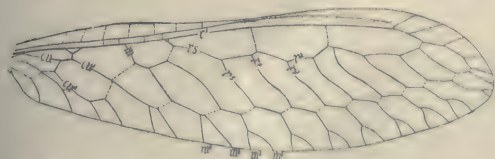


Fig. 10.—*Mantispa interrupta*. Fore wing.

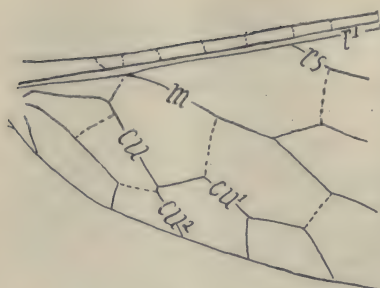


Fig. 11.—*Mantispa interrupta*. Part of hind wing.

the media fuses with that of the radius for some distance; and, in the anterior wing, Fig. 10, the media dips down and then fuses with the radius again thus forming a small triangular cell. After the media is finally free it divides into the typical number of branches.

CHRYSOPIDÆ.

In the *Chrysopidæ* we find a great modification by coalescence.

In the anterior wing of *Chrysopa plorabunda*, Fig. 12, the veins in the middle run zigzag and fuse at their angles, forming a reticular structure without the interposition of true cross veins. The so-called "cross vein" of the "third cubital cell" ($m^3 + 4$) behaves in a very peculiar manner: $m^3 + 4$ runs obliquely forward and coalesces for some distance with $m^1 + 2$, and then separates from it again.



Fig. 12.—*Chrysopa plorabunda*. Fore wing. Where veins have coalesced I have represented them slightly separate for clearness of interpretation.

The hind wing, Fig. 13, resembles *Myrmeleon*, save that *rs* and *m* coalesce for some distance.

The hind wing, Fig. 13, resembles *Myrmeleon*, save that *rs* and *m* coalesce for some distance.

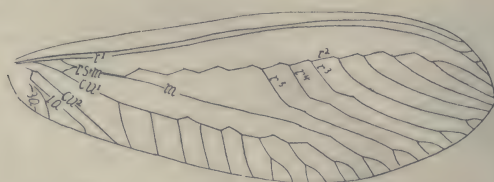


Fig 13.—*Chrysopa plorabunda*. Hind wing.

PANORPINA (MECAPTERA.)**PANORPIDÆ.**

The venation of the *Panorpidæ* is quite typical, save for the fusion of veins near the base of the wing, due to narrowing of this region, and the development of a few accessory veins.

In *Panorpa confusa*, Fig. 14, r^2 branches once.

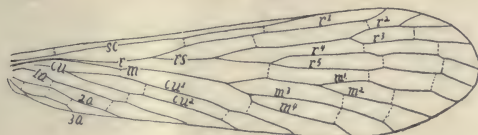


Fig. 14.—*Panorpa confusa*. Wing.

In *Bittacus strigosus*, Fig. 15, m and Cu^1 coalesce for some distance.

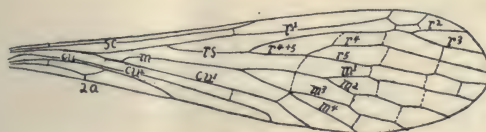


Fig. 15.—*Bittacus strigosus*. Wing.

An Interesting New Genus and Species of Encyrtidae.

By L. O. HOWARD.

The newspapers have given an account of how the State Board of Horticulture of California sent an orange or lemon tree to China in charge of Mr. George Compere, in order to stock it with Chinese parasites of the red scale and then return it to California. Mr. Compere has been good enough to send me specimens of the parasites reared in China, one of which proves to be a small variety of *Aphelinus diasphidis* mihi, and the other is the remarkable form described below.

COMPERIELLA gen. nov.

Female: Body robust, abdomen slightly shorter than thorax; head not oblong; antennae flattened, broad; tip of scape, pedicel, funicle joints and club of equal width, pedicel tringu-

lar, funicle joints 6 in number, much shorter than broad, compressed, cup-shaped; club suboval, three-jointed, as long as all 6 funicle joints together, slightly flattened at the tip, first joint longest, third joint shortest. Wings with an oblique hairless line running from stigmal vein anally and distally; three hairless spaces beyond the middle of the wing, and two broad diverging bands of cilia beginning about the middle of the wing, the uppermost ending at wing apex and the other half way from this point to the rounded anal angle. Marginal vein very short; stigmal short, obtuse, descending at nearly right angles to the wing margin. Ovipositor scarcely extruded.

Male: Unknown. Comes nearest to *Habrolepis*. Name derived from Compere (George).

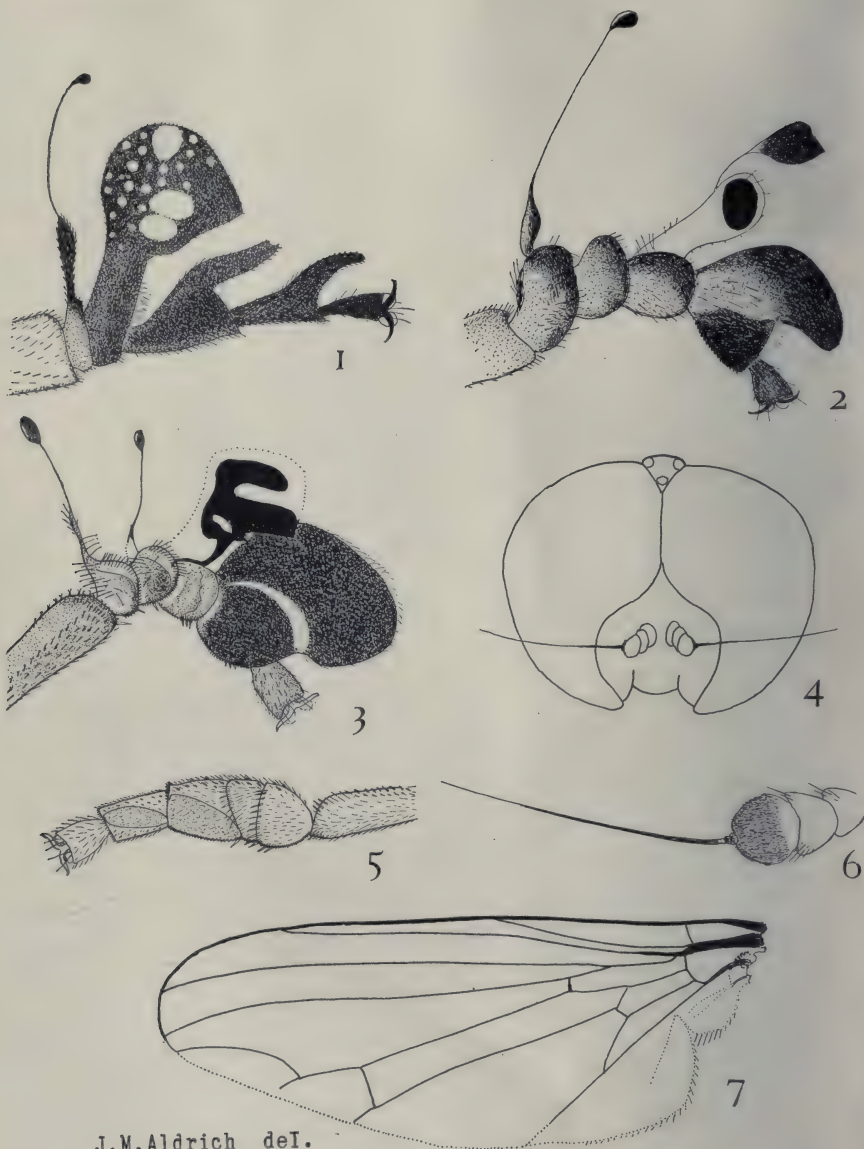
***Comperiella bifasciata* sp. n.**

Length: 1.1 mm.; expanse, 2.1 mm.; greatest width of forewing, .33 mm. General color black, with greenish-golden reflections on mesoscutum, and bluish metallic reflections on mesoscutellum. Head with a central longitudinal occipital band which extends on pronotum, with a yellowish longitudinal band either side. Antennae uniformly dark brown, nearly black, somewhat lighter at tip of club. Front femora and tibiae dusky, becoming light toward the tip of the tibiae; first 4 tarsal joints very light yellow, apical joint dusky. Hind femora and tibiae dark brown, nearly black; tarsal joints white, except apical joint, which is black. Wings hyaline, except for a dusky patch below stigma, and 2 divergent fascia of a brownish color corresponding almost exactly with the bands of cilia mentioned in the generic description; a small darker brown spot at marginal vein.

Described from one female specimen bred from *Aspidiotus* (*Aonidiella*) *aurantii* Maskell, by Mr. George Compere.

Habitat: China. Type to be deposited in the U. S. National Museum.

THE OHIO UNIVERSITY LAKE LABORATORY, at Cedar Point, will be open from June 25th to August 3d. The course in entomology will include collecting, mounting, and identifying insects in connection with studies in life history and anatomy. Excellent opportunities for life history studies are offered both on aquatic and terrestrial forms. Prof. Osborn, State University, Columbus, Ohio, will be in charge.



J.M.Aldrich del.

THE DIPTEROUS GENUS CALOTARSA.

The Dipterous Genus *Calotarsa*, with one new Species.

By J. M. ALDRICH.

(Plate IV)

The discovery of a new species of this charming little group makes it worth while to give a brief review of the genus.

Townsend, in 1894 (Canadian Entomologist, XXVI, 50-52, figs.), described the genus and its typical species, *Calotarsa ornatipes*, from a single male specimen collected at Champaign, Ill. He referred the genus to the family Syrphidae, in which he acknowledged that it would occupy a very anomalous position. The error of overlooking the family Platypezidae was corrected by Banks in the next number of the journal (p. 88); he expressed the opinion that *Calotarsa* was a synonym of *Platypeza*, and reported another male specimen in his collection, taken at Ithaca, N. Y. In the following number of the journal, Townsend admitted the relationship of the genus to the Platypezidae, but contended that it was not synonymous with *Platypeza* (p. 102). Williston in the same number (p. 116) mentioned the genus as probably synonymous with *Platypeza*.

Late in 1894, W. A. Snow published in the Kansas University Quarterly (III, 143-152, 1 pl.), a revision of the North American Platypezidae, with several new species; a supplement to the paper was added in the same publication in January, 1895 (III, 205-207). He did not accept *Calotarsa*, referring *ornatipes* to *Platypeza*; he described another species with greatly ornamented hind feet, under the name of *Platypeza calceata*. Of this he had seventy-five males and one female, collected in Hop Canyon, Magdalena Mts., N. M., on August 19-21, 1894. He also reported another specimen of *ornatipes*, sent him by me, and collected by me on a window at Brookings, S. D. No other species with ornamented hind tarsi have been known up to the present, nor have any other specimens of the two described species come to light, as far as I know.

In my catalogue of North American Diptera, I recognized *Calotarsa* as a distinct genus, mentioning that I did so on Mr. Kahl's recommendation.

The question whether it is really synonymous with *Platypeza* I am unable to settle at present, not having access to material in typical *Platypeza*. Snow declared that a somewhat larger size and the ornamentation of the hind tarsi of the male were the only characters to separate the two genera, and he thought them insufficient. The typical *Platypezas* figured by Snow show in the male the hind tarsus but little modified—less than in the female—nothing at all of the surprising structures shown in his figures of *ornatipes* and *calceata*, which I reproduce on my plate. The question of synonymy I leave in abeyance, rather hoping that further examination of abundant material may show characters applicable to both sexes; at least we have subgeneric characters in the feet of the male.

The two species previously known and the one herein described will be readily separated by the* characters of the hind tarsi of the males, as shown in the plate. I will only add in this connection that otherwise the three species are exceedingly close together, *insignis* being more uniformly yellow on the abdomen than the other two. The female of *ornatipes* is as yet unknown, while of the other two *insignis* has a wholly pure yellow abdomen, differing slightly from *calceata*. The three species form a very compact group, whether of generic or subgeneric rank.

In regard to the habits of the adults and the function of the tarsal ornaments, little has been observed. In *ornatipes*, only three specimens are known, one of which was collected on a window—obviously an accidental occurrence. Of *insignis*, the type male was collected hovering in the air in half-shady open woods, about four feet above the ground; the females were all collected in rather open woods, hovering in the air, most of them over a wet spot in a shady road, which no doubt attracted them, as the weather at the time was intensely dry. It was about four in the afternoon, and no males were flying at the time. Snow noted a few interesting points about the habits of *calceata*. The flies were "dodging and soaring in the air

* Secondary sexual characters are very constant in Diptera, whatever may be the case in other animals. I remember hearing Dr. John B. Smith say that he found the same constancy in Lepidoptera. I have long believed that Darwin over-estimated the variability of these characters in general.

in assemblages of, say, a dozen individuals. None were caught outside an area of about an acre." "In flight these insects allow their hind feet to hang heavily downward, and look as if they were carrying a burden." His single female was one of a pair that were copulating on the wing.

These enlarged feet naturally suggest those of *Dolichopus*, a genus of flies somewhat distant from this, in which the males parade their tarsal ornaments assiduously before the females. When the front tarsi are ornamented, the insect stands on the ground to display them, but a case is known in which the middle tarsi are the beautiful ones, and the male of this species hovers over the sitting female so that the tarsi hang before her. In *Calotarsa* it is not unlikely that both sexes are on the wing while these exhibitions occur, hence it may be very difficult to make close observations of them.

Before passing to the general description of the new species, I will describe the hind tarsi of the male, as they are extremely interesting and remarkable.

All the first four joints are compressed, and on the inner surface have a fine brush of close appressed yellow bifurcated hairs, which is best developed on the second and third segments. These joints are all provided with a vertical groove at the distal end, enclosing the proximal part of the succeeding joint; hence the second and third appendages appear in side view as if they arose between two segments. The outer side of the first and second joints has numerous stiff hairs, which end in very slight knobs.

The first joint has on the upper side near the base a slender, long process, ending in an oval disk; its basal part is somewhat thickened, and has a few of the blunt hairs before mentioned.

The second joint has a similar organ arising in a corresponding position; in this case the process is smaller, and at the base is compressed and transparent.

The third joint has attached to its upper surface, from the base nearly to the apex, a very thin membrane-like expansion, which is of a bright silvery color, and bears a peculiar jet-black pattern. It has somewhat the appearance of a flag, and

suggested the specific name (*insignis*, distinguished by a mark).

The fourth has a large, comparatively thick expansion upward and outward, which is black in color, and is set off from the body of the joint by a white or somewhat silvery crescent.

The fifth joint is not at all compressed, and has in fact a perfectly normal structure, rather depressed.

The figure shows the "flag" lapped over a little on the enlarged fourth joint.

***Calotarsa insignis* n. sp.**

Male.—Length, 6.5 mm. Head and thorax black, cinereous; proboscis, legs and abdomen yellow. Eyes contiguous for a considerable distance on the front, ocellar tubercle prominent, with a few small brown hairs; face black, cinereous, concave and receding below; antennae yellow, short, the third joint, except its base, infuscated, the three joints of successively increasing length; arista apical bare, slender; proboscis retracted, short, yellow, palpi very small, yellow; occiput black, rather flat, almost bare. Thorax black, cinereous, especially on the sides; four faint brown lines on the dorsum, the two inner ones close together, abbreviated behind, the two outer ones abbreviated in front; on the side of the dorsum, before the transverse suture, are three small bristles; before the scutellum, at each side, are three or four very small ones; on the margin of the scutellum are five pairs of larger ones, with a considerable median interval; the scutellum yellowish, except on the disk; humeri a little yellowish; halteres yellow, the large, crumpled knob a little infuscated; squamae yellow, with delicate yellow cilia; metanotum black. Abdomen yellow, all the incisures, except the first, narrowly blackish (the first slightly blackish at the sides); hypopygium exerted, rounded, rolled up under the fifth segment; on the hypopygium and along the sides of the abdomen are fine, erect hairs, longer, more bushy, and yellow anteriorly; behind they are brown. Fore and middle legs, including coxae and tarsi yellow, the femora moderately infuscated above, and with a stripe of black hairs on the front; the tibiae gradually and moderately infuscated from near the base; hind tarsi as figured and above described. Wings subhyaline, slightly infuscated toward the apex; the space between auxiliary and first longitudinal cells yellow; third vein ending exactly in the apex; fourth vein forked, the posterior branch ending half way between point of furcation and the margin; hind cross-vein hardly more than half its length from the margin.

Female.—Length, 4.8 mm. Front rather wide, narrowing slightly below, opaque dark brown in color, near the antennae cinereous, with a median depression; proboscis and palpi larger, antennae smaller than the male. The brown lines of the thorax are more distinct. The pos-

terior part of the thorax, with only two bristles on each side; scutellum with three pairs of bristles. Abdomen yellow, scarcely infuscated at all. Legs wholly yellow, except the tarsi, which are somewhat infuscated toward the end; they are compressed and enlarged as shown in figure. Venation as figured; the posterior branch of the fourth vein comes nearer the margin than in the male, but does not reach it.

Material examined: The type is a male, captured October 21, 1905, in the foothills about six miles west of Stanford University. There is another male (cotype) in the collection of the entomological department of Stanford University, collected in the vicinity October 7, 1900. Nine females, all collected by myself in the same vicinity as the first-mentioned male, on October 21 and 28, 1905. Two of these cotype females will be deposited in the collection of the entomological department of Stanford University. The type and the other females will remain for the present in my own collection.

EXPLANATION OF PLATE IV.

1. Hind tarsus of *Calotarsa calceata*, male, enlarged (after Snow).
2. Hind tarsus of *C. ornatipes*, male, enlarged (after Snow).
3. Hind tarsus of *C. insignis* n. sp., male, outer side x 20.
4. Head of *C. insignis*, male, front view, x 20.
5. Hind tarsus of *C. insignis*, female, outer side, x 25.
6. Antenna of *C. insignis*, male, inner side, x 40.
7. Wing of *C. insignis*, female, x 15.

Some new or little known Aleyrodidae from Connecticut.—II.*

BY W. E. BRITTON.

Aleyrodes forbesii Ashmead.

(*aceris* Forbes. Name preoccupied).

A. aceris Forbes. 14th Report Insects of Illinois, p. 110, 1884.

A. aceris Forbes. Packard, 5th Report, U. S. Entomological Commission, p. 422, 1890.

A. forbesii Ashmead, Bull. 45, U. S. National Museum, p. 274, 1893.

A. forbesii Ashm. Quaintance, Technical Bull. 8, Bureau of Entomology, p. 27, 1900.

A. forbesii Ashm. Morrill, Psyche, Vol. X, p. 82, 1903.

A. forbesii Ashm. Bemis, Proc. U. S. National Museum, Vol. XXVII, p. 503, 1904.

* For the first paper on this subject, see ENT. NEWS, Vol. XVI, p. 65, March, 1905.

This is a large species, the pupa measuring about 1.5 x 1 mm., and from oval to oblong in shape. It is considerably raised above the surface of the leaf, and the pupa case soon falls away, leaving only a portion of the marginal rim of wax. Varying from light yellowish green with purplish markings, to purple or chocolate with green or whitish spots or blotches near the margin. Dorsum flat, without spines or wax rods. I have never seen the adult of this species, but it is described as white or yellowish, with immaculate wings. Larvae and pupae are not abundant, and usually one or two are found upon a leaf.

Collected by the writer September 20, 1904, September 8, 1905, at Westville, Ct.; September 15, 1905, New Canaan, Ct.; on red and silver maple. At New Canaan it seemed to be most abundant on a cut-leaved variety of the silver maple.

Aleyrodes packardi Morrill.

A. packardi Morrill, Canadian Entomologist, Vol. XXXV, p. 25, 1903; Psyche, Vol. X, p. 83, 1903; Technical Bull., No. 1, Mass. Agr. Expt. Station, August, 1903.

For several years this species has been confused with *A. vaporariorum* Westwood, and in literature, many references to the latter doubtless refer to *A. packardi*. For a more complete bibliography the reader is referred to Canadian Entomologist, Vol. XXXV, p. 35, and Technical Bull. No. 1, Mass. Agr. Expt. Station, p. 61.

Pupa about .80 x .48 mm., broadly oval. Dorsal surface nearly flat. Two series of marginal wax rods; the outer radiating, somewhat curved, the length about equal to one-half the breadth of the pupa; the inner series are nearly twice as long, and are curved upward and inward over the body.

Rather abundant on the leaves of cultivated strawberries at West Hartford, June 30, 1905.

Aleyrodes mori Quaintance.

A. mori Quaintance, Canadian Entomologist, Vol. XXXI, p. 1.

A. mori Quaintance, Technical Bull. 8, Division of Entomology, p. 29, 1900.

A. mori Quaintance, Bemis, Proc. U. S. National Museum, Vol. XXVII, p. 507, 1904.

Pupa about .70 x .55 mm., elliptical, body black with broad marginal fringe of white wax. A striking species. Adult with clouded wings.

On leaves of box elder, New Haven, July 22; *Fraxinus americana*, *Carpinus caroliniana* and *Celtis occidentalis*, New Haven, September 20, 1904; *Celtis occidentalis* and catalpa, New Haven, September 8, 1905.

I have never seen this as abundant as figured by Quaintance (Can. Ent. Vol. XXXI, pl. 1), but usually not more than three or four specimens occur on a leaf.

Morrill described a subspecies *maculata* Psyche Vol. X, p. 81, 1903), which differed from *mori* in the adult stage by having a bright yellow body. I have not reared or obtained adults, but Professor Quaintance has examined some of the pupa cases, and pronounces the species *mori*.

Aleyrodes fernaldi Morrill.

A. fernaldi Morrill. Psyche, Vol. X, p. 83, 1903.

A medium-sized oval species, pupa case about .78 x .50 mm., with no wax rods. Dorsal surface flat, color pale greenish white. Adult, body pale yellow, wings immaculate.

Occurring on the under surface of leaves of spiraeas Van Houtei and Anthony Waterer in a nursery near New Haven, September 8, 1905.

Aleyrodes vaporariorum Westwood.

A. vaporariorum Westwood, Gardeners' Chronicle, p. 852, 1856.

A. vaporariorum Westw. Signoret, Ann. de le Soc. Ent. de France, p. 387, 1867.

A. vaporariorum Westw. Britton, Bull. 140, Conn. Agr. Expt. Station, 1902. Report Conn. Agr. Expt. Station, p. 148, 1902.

A. vaporariorum Westw. Cary, Bull. 96, Maine Agr. Expt. Station, 1903.

A. vaporariorum Morrill, Technical Bull. No. 1, Mass. Agr. Expt. Station, 1903. Circular No. 57, Bureau of Entomology, U. S. Dept. Agr., 1905.

For more complete bibliography, see Report of Conn. Agr. Expt. Station, p. 159, 1902, and Technical Bull. No. 1, Mass. Agr. Expt. Station, p. 52, 1903.

This species is probably the most common of all described

aleyrodids occurring in Connecticut. In greenhouses and dwellings it lives through the winter on various kinds of plants. Remedial measures are absolutely necessary to save the infested plants, and of these fumigation with hydrocyanic acid gas is perhaps the most successful. House plants can be dipped into a soap and water mixture (1 lb. to 8 gals.) with good results.

Larvae and pupae are oval, light green or yellow in color, and abound on the under sides of the leaves. Pupa about .70 x .50 mm., with submarginal row of wax rods. Six pairs of long curved wax rods are borne on the dorsum, which is somewhat convex.

Body of adult is yellow, wings white and immaculate.

A. vaporariorum has been collected and observed upon over sixty different food plants in Connecticut, but it is especially abundant on tomato, melon, cucumber, tobacco, *Ageratum*, *Lantana*, *Fuchsia* and heliotrope.

Formaldehyde as an Insecticide.

BY M. V. SLINGERLAND.

Cornell University recently purchased quite a large quantity of "Solidified Formaldehyde," subject to a written contract that "this material is guaranteed to kill bedbugs, moths and roaches, used with 4 ounces to 1,000 cubic feet and exposure to fumes of gas 8 hours, closed room." This was a good opportunity to test the insecticidal value of formaldehyde, and I made the following experiment:

Five live bedbugs were placed (one in each) in small paste-board pill boxes, which were covered with one thickness of a muslin with meshes about one millimeter square. Ten live cockroaches were placed in each of three glass, pint, fruit-jars, covered with one thickness of a thin muslin with meshes nearly one-half millimeter square. These insects were placed in different parts of a room, some on the floor, others near the ceiling, and some about midway of the room, on top of some furniture. The room contained 1,760 cubic feet, but was

nearly one-third full of furniture, so that there was not over 1,600 cubic feet of air-space to be fumigated. The room was made as tight as practicable and eight ounces of the Solidified Formaldehyde were used, strictly according to directions, in a generator specially designed for using it. The fumigation was begun at nine o'clock A. M., January 30th, 1906, and the room was not opened until the next morning, thus continuing the fumigation for twenty-four hours. As the formaldehyde costs about 35 cents an ounce, it was an expensive operation for a single, medium-sized room.

Upon opening the room, the formaldehyde fumes were sufficiently strong to make one's eyes and nostrils smart, and it was several minutes before I could go into the room comfortably to get the insects.

Although more than the designated amount of Solidified Formaldehyde was used and the fumigation was continued longer than specified, yet it resulted in not killing a single bedbug or cockroach.

Dr. L. O. Howard writes me that "The Public Health and Marine-Hospital Service report formaldehyde as not possessing insecticidal properties against mosquitoes." Also, that Mr. Titus, one of his assistants, knows of an instance where a large number of Lepidopterous pupae in soil were in a small room where formaldehyde gas was generated (strength of the gas unknown), and from none of these pupae were adults afterwards bred, while from other pupae from the same material, not in this room, the moths came out in usual numbers. The inference is reasonably plain that the gas killed the pupae, but the evidence is not conclusive, as it was not an experiment but simply an accident.

In 1901, C. L. Marlatt, of the Bureau of Entomology, reported (Bull. 30, New Series, p. 39) some experiments to test the insecticidal value of formaldehyde gas. Some earlier trials had resulted in indicating little value in the gas for killing insects. Then a test was made against the Angoumois grain moth and the bean weevil in stored seeds. The gas was generated to 3 or 4 times the amount necessary for germicide purposes. Only a few of the moths (some that were flying

about) were killed, but the weevils were not injured in the least.

In 1897 (Rept. Ottawa Expt. Farms for 1897, p. 106). Duchess apple trees were sprayed in Canada with formalin at the strengths of 1, 2, and 4 ounces to 5 gallons water. No injury or benefit resulted to the foliage or fruit, except a slight indication of some deterrent influence against the codling-moth; plant-lice were not killed.

In 1900, C. P. Lounsbury, Government Entomologist of Cape of Good Hope, South Africa, reported (his Report for 1899, p. 17) the following important experiment in fumigating railway carriages for bedbugs. The experiment was made under supervision of a professional chemist. "The bedbugs were not destroyed even when left exposed for two full days in a carriage, treated with all the gas contained in 800 c.c. (about 12 ounces of formaldehyde, or not quite as strong as I used it) of the water solution of formalin. The gas was forced into the carriage under heavy pressure, and the bedbugs were enclosed in a piece of mosquito netting suspended near the middle of the space. The carriage was of about 2,500 cubic feet capacity, and all its cracks, crevices and air-holes were tightly stopped with cotton wool. House-flies and aphids shut in the carriage were found dead, but larvae and adult scale insects of several species, and plant-bugs of three species were found to have survived. Formaldehyde gas of far greater but indefinite strength, generated from formalin tablets, was also inefficacious in destroying imprisoned bedbugs."

Finally, there has just come to hand the report of another experiment by Prof. Dr. K. Lampert with formaldehyde against insects in Germany (*Zeitschrift für Wissenschaftliche Insektenbiologie*, Vol. XI, January 31, 1906, p. 12). In a room containing about 70 cubic meters (2,400 cu. ft.) 1,100 c.c. of 40 per cent. formalin (= about 17 ounces of formaldehyde, or stronger than I used it in my experiment) was generated for 4 hours. A number of cockroaches (*B. orientalis* and *germanica*), 2 spiders, several larvae of the larder beetle (*D. lardarius*), some sow-bugs, 3 larvae of saw-flies, meal-

worms, and earthworms were placed in the room in glasses covered with open netting; one earthworm was buried in soil. All of the Arthropods survived without any injury the effects of the fumes in which a man would probably die in a short time, and in which dogs and birds perish. Two earthworms exposed to the fumes without soil had dried out and were dead, while the one in the soil remained fresh and lively. "This astonishing resistance to the fumes," says Lampert, "could possibly be explained by the tracheal respiration as the animals close the breathing-holes and the air collected in the tracheæ would be sufficient for the little breathing necessary. That the chitinous armor is of little importance in resisting the fumes, is proven by the ability to resist of the thin-skinned saw-fly larvae."

I have found in a hasty review of the literature no other records of experiments with formaldehyde as an insecticide. The evidence submitted seems to be overwhelming that formaldehyde has little or no insecticidal qualities, when used in practicable quantities, and especially against household insects.

Dragonflies (Odonata) Collected by Dr. D. A. Atkinson in Newfoundland, with Notes on some Species of Somatochlora.

BY E. B. WILLIAMSON.

(Plates V and VI.)

The only list of Newfoundland dragonflies known to me is the paper in Ent. Month. Mag. XI, pp. 241-243, April, 1875, by De Selys, based on collections made by John Milne. De Selys records the following species: *Leucorhinia hudsonica*, Selys 1 ♂, *Cordulia shurtleffi* Scudder, 1 ♀, *Epithea cingulata* Selys, 2 ♂ and 3 ♀, *Epithea forcipata* Scudder, 1 ♀, *Aeschna hudsonica* n. sp. 1 ♂ and 4 ♀ (also from Canada), *Aeschna clepsydra* Say (?) 2 ♀, *Gomphus* (?) sp. 1 ♂, and *Aenallagma boreale* n. sp. 1 ♂ and 1 ♀.

In Ent. News, May, 1902, pp. 144-146, I recorded the species taken by Dr. Atkinson at the Magdalen Islands. This list was remarkable for its cosmopolitan character. Only 6 species

were taken in the almost barren Magdalens, and 3 of these are not represented in the Newfoundland collection: *Agrion resolutum*, *Enallagma hageni* and *Aeshna juncea*, all widely distributed species which more extensive collecting would probably show as belonging to the Newfoundland fauna. In fact, *Aeshna hudsonica* Selys mentioned above is probably only a variety at the most, of *juncea*. Dr. Atkinson collected in Newfoundland only two days, July 7 and July 21, 1901, and at two localities, Bay of Islands, and Grand Lake, yet his collection contains 14 or possibly 15 species, and, in its richness of Aeshnas and Somatochloras, it is, for its size, the most interesting I have ever studied. The study of these Somatochloras from time to time has delayed the recording of Dr. Atkinson's captures till this late date.

Enallagma ebrium. Hagen. Eight males from Grand Lake, July 21, 1901.

Enallagma calverti, Morse. Five males from Bay of Islands, July 7, 1901. No *Enallagmas* in the collection agree with the color pattern of *Enallagma boreale* Selys, based on a single specimen of each sex taken in Newfoundland. But the description of the abdominal appendages of the male of *boreale* applies almost certainly to the species later described by Morse as *calverti*. In so far as it will probably be possible for some of our European friends to determine this matter certainly by a study of the type of *boreale*, I have here recorded the species, in conformity with recent usage, as *calverti*.

Enallagma cyathigerum, Charp. Six males from Bay of Islands, July 7, 1901. Four female *Enallagmas* in the collection I have not attempted to determine specifically.

Aeshna clepsydra Say. Bay of Islands, July 7, 1901. 3 ♂ and 1 ♀; Grand Lake, July 21, 1901, 1 ♂ and 2 ♀. To this species for the present are also referred 1 ♂, Grand Lake, July 21, 1901, and 1 ♀, Bay of Islands, July 7, 1901. These two specimens were referred to Dr. Calvert, who wrote, under date of January 27, 1904, "The ♂ *Aeshna* from Grand Lake, Newfoundland, is like a ♂ from Chicoutimi, Quebec, in the broken stripes on sides of thorax,* in denticulated carina of

* Two other ♂♂ from Chicoutimi have the stripes of thorax apparently not broken.'

superior appendages, and in size and color of pterostigma, but differs in shape of tip of superior appendages, viewed from above, the Chicoutimi ♂ having the tip shaped like fig. 7, Ent. News, 1894, p. 11. The original (from Lake St. Regis, N. Y.), of my fig. 5 (l. c.), also has the broken stripes on the sides of the thorax, but has the pterostigma of front wing measuring only 3 mm. on its costal edge; length of front wing, 45 mm. A female from Lake St. Regis has stripes on sides of thorax very nearly identical with those of this ♀ from Bay of Islands, Newfoundland. It is rather small—abdomen (exclusive of appendages) 45 mm., hind wing, 43 mm.; pterostigma smaller, the costal edge of pterostigma of front wing, 3.75 mm. You will see, therefore, that your Grand Lake ♂ is very nearly identical with the Lake St. Regis ♂, which, in 1893, I called *clepsydra*. Whether the breaking up of the stripes on sides of thorax entitles the holder to a distinct specific or varietal name I will not now decide."

The appendages of this Newfoundland ♂ are in bad condition. The color pattern of thorax of both ♂ and ♀ are very different from any other specimens of the large series of *dep-sydra* I have seen from Newfoundland, Ohio, Michigan and Indiana. In these two the thoracic pattern is more suggestive of *juncea* though, of course, the lateral stripes are not broken in *juncea*. *Aeshna hudsonica*, as Dr. Calvert writes me, seems to be hardly distinct from *juncea*, even as a variety.

Aeshna sitchensis Hagen. Bay of Islands, July 7, 1901, 1 ♂ and 1 ♀. Determination confirmed by Dr. Calvert.

Aeshna septentrionalis Burm. Grand Lake, July 21, 1901, 1 ♀. Determination confirmed by Dr. Calvert.

Cordulia shurtleffi Scudder. Bay of Islands, July 7, 1901, 2 ♂ and 1 ♀.

Somatochlora cingulata Selys. Bay of Islands, July 7, 1901, 1 ♂; Grand Lake, July 21, 1901, 1 ♀.

Somatochlora albicincta Burm. Bay of Islands, July 7, 1901, ♂ 1 and 1 ♀.

Somatochlora hudsonica Selys. Grand Lake, July 21, 1901, 1 ♂; Bay of Islands, July 7, 1901, 2 ♀.

Somatochlora forcipata Scudder. Grand Lake, July 21, 1901, 1 ♂.

Leucorhinia hudsonica Selys. Bay of Islands, July 7, 1901, 4 ♂ and 4 ♀.

Sympetrum costiferum Hagen. A single ♀, badly damaged, from Bay of Islands, July 7, 1901, apparently belongs to this species.

Libellula quadrimaculata L. Bay of Islands, July 7, 1901, 1 ♀.

Notes on some species of Somatochlora. *Somatochlora semicircularis*, *septentrionalis*, *artica* and *forcipata* are a group of closely related species with long slender abdomens and relatively short wings. The difficulty in determining Dr. Atkinson's single ♂ of this group led to a study of these four species. Of *forcipata* I have seen but two specimens, the headless specimen, collected by Dr. Atkinson, and a male in the Harvey collection, S. LaGrange, June 28, 1898, F. L. Harvey, collector. The abdominal appendages of the Maine specimen seen in profile, are much more strongly arched than in the Newfoundland specimen. I have obtained from Mr. R. C. Osburn the specimen mentioned by him as *forcipata*, in ENT. NEWS, June, 1905, p. 191,* from Port Renfrew, British Columbia. I refer this specimen to *semicircularis*. I am able to separate *semicircularis* and *forcipata* only by the abdominal appendages of the male. The Newfoundland *forcipata* is more slender than the Maine *semicircularis* (a difference pointed out by De Selys for the two species), but the Maine *forcipata* is about as robust as the two specimens of *semicircularis* which I have seen from that State—the one figured and a second from Orono, Maine, July 16, 1891, F. L. Harvey, collector, referred to in ENT. NEWS, May, 1892, p. 116, as *forcipata*. On the basis of this Orono specimen, *semicircularis* can be added to the New England fauna. Scudder's description of *forcipata* fits the two specimens which I have referred to this species in the form of the appendages and in the presence on abdominal segment 5 and the two or three following segments of a distinct basal, lateral small yellow spot. These spots are wanting in the single male of *septentrionalis* I have seen and in *semicircularis* from Maine

* In the same paper by Mr. Osburn, p. 192, he identifies two imperfect ♀ of *Sympetrum* as *obtusum*. After a study of both specimens I believe they belong rather to *pallipes*.

and Colorado. But *semicircularis* from British Columbia have the abdomen either uniformly colored or spotted. Of *semicircularis* I have studied: Maine, 2 ♂; mountains of Southwestern Colorado, 11 ♂ and 4 ♀ loaned me by Dr. Calvert; Langford Lake, British Columbia, 2 ♂, R. C. Osburn, collector; Glacier, British Columbia, 4 ♂, R. C. Osburn, collector; Port Renfrew, British Columbia, 1 ♂, R. C. Osburn, collector. Characters of 13 males of this material were tabulated. The abdomen varies from 34-39 mm. in length, averaging between 38 and 39 for all the material excepting the Colorado specimens, which are 34. *Forcipata* measures 37 and 38. In length of hind wing all specimens of *semicircularis* are very uniform, varying from 29-32, the majority being 31, which is the exact measurement for this part in both *forcipata*. The color of the costa will not separate the two species. Postcubitals in the front wings vary from 5 (in a single wing) to 8 (in 2 wings). The usual number is 6 or 7 in both species. The yellow spots on frons in front are variable in size, regardless of locality. The lateral thoracic stripes are variable in extent (at least in dried material), and will not serve to separate species or localities. *Forcipata* (both specimens) and *semicircularis* from Maine have the anterior femora brown beneath; all the other specimens of *semicircularis*, so far as I could determine, have the anterior femora black beneath. One *semicircularis* from Maine has the upper lip with two clear brown spots. All other specimens of both species have this lip black. Nasus in *forcipata* (one specimen) and *semicircularis* from Maine is dull brown; in all western specimens of *semicircularis* and in *septentrionalis*, the nasus is metallic, like the frons, and the *semicircularis* from Colorado have the labrum almost or quite metallic. So, as stated, I can find no characters other than those of the appendages for separating *forcipata* and *semicircularis*. These characters, both of superior and inferior appendages, seem good so far as specimens before me go, but it is possible that more extensive material might render these inadequate for the separation of the two species as at present understood.

Septentrionalis, apart from its basal wing markings, is sepa-

rated from the others by its appendages and the relatively short hind wings (abdomen 36 mm.; h. w. 26 mm.).

Somatochlora hudsonica, *alpestris*, *albicincta* and probably *cingulata** form a group of closely related species with relatively robust abdomens and long wings. *Hudsonica* finds its closest ally in the European *alpestris* from which it is separated, among other characters, by the great development of the basal spine of the superior appendages. In *alpestris* the basal spine and the spine following it are about equal in size, and the profile view gives an accurate idea of the full size of these spines. In its wing markings *hudsonica* is like *septentrionalis*.

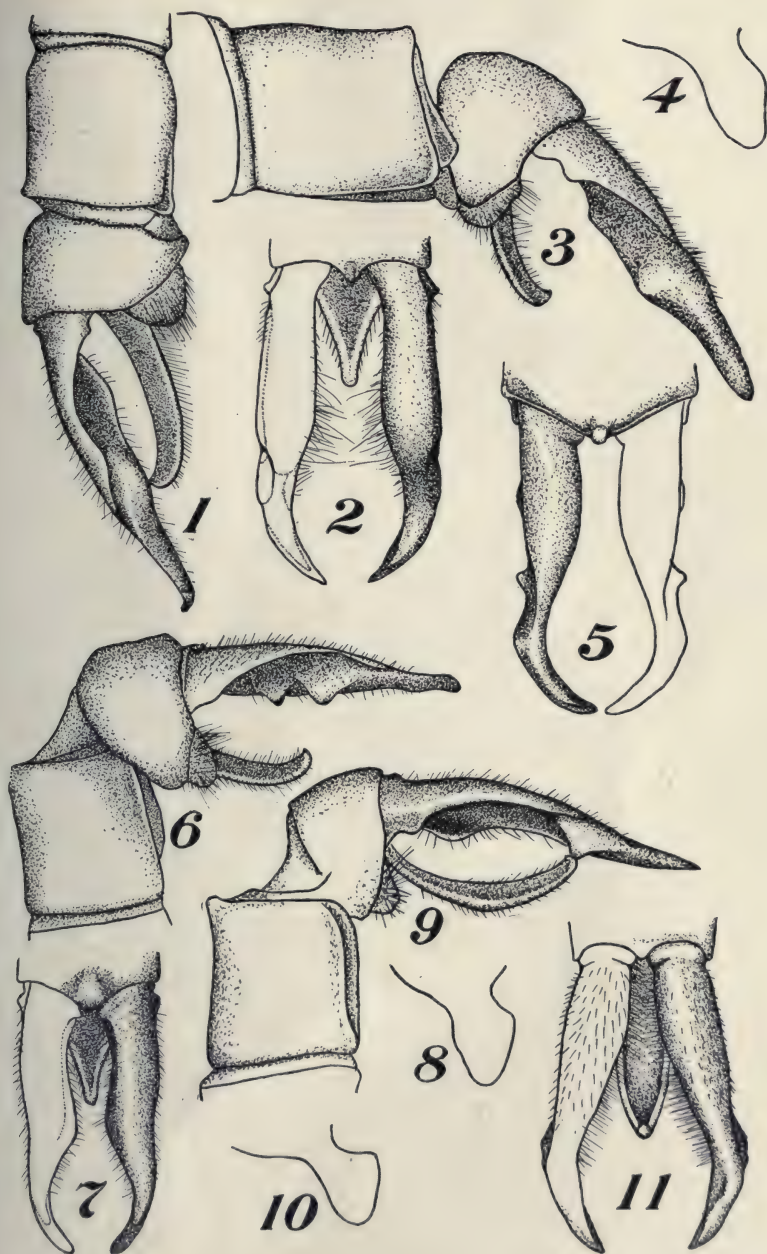
Albicincta is very distinct from the two preceding species; and *cingulata* is at once distinguished from them all by its larger size and the broadly forked inferior appendages. The ♀ of *hudsonica* from which the figure of the vulvar lamina was drawn has the abdomen very flattened and the vulvar lamina much pinched together, so the figure is probably somewhat deceptive. The second ♀ collected by Dr. Atkinson has the last abdominal segments wanting. The vulvar laminae represented in figs. 20 and 21 are normal in shape, the abdomens not being distorted.

EXPLANATION OF PLATES V AND VI.

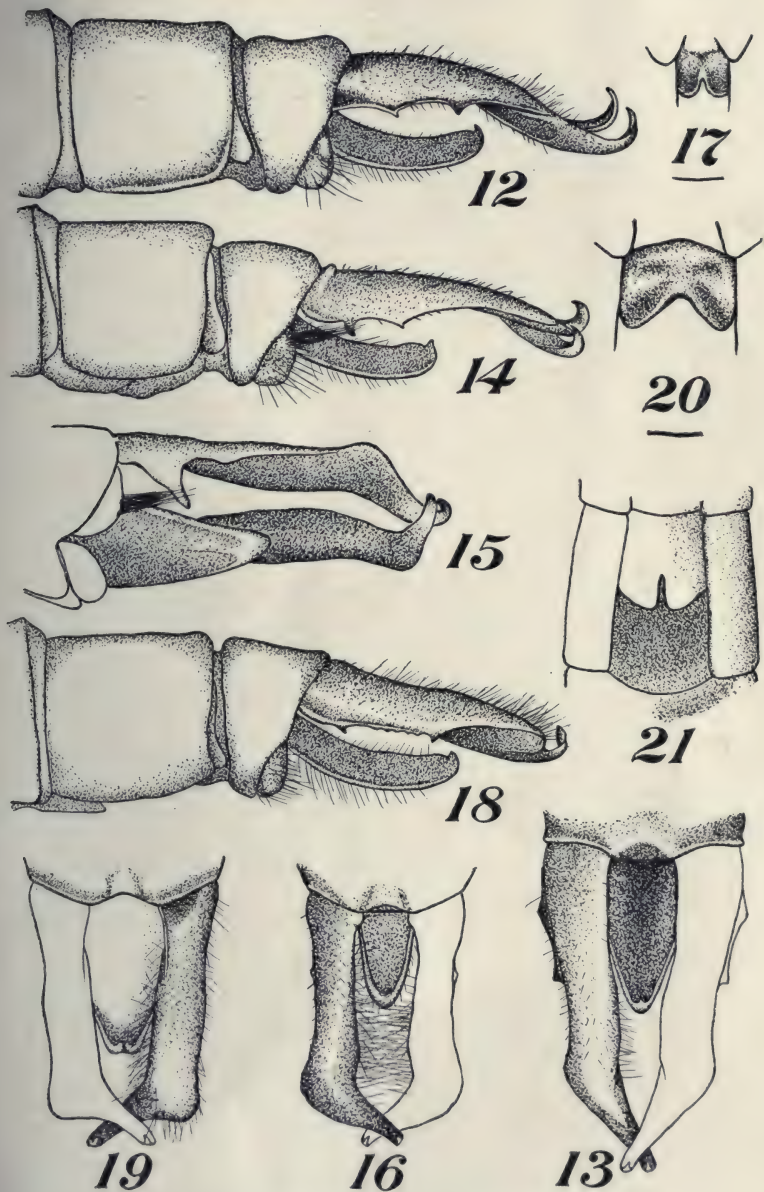
All specimens figured are in collection of E. B. Williamson.

- Fig. 1. Appendages in profile of *Somatochlora septentrionalis* ♂, Orono, Maine, June 18, 1898, Bartle Harvey, collector. This specimen has the left superior appendage wanting and the wings are in bad condition.
- Figs. 2, 3, 4, and 5; *Somatochlora semicircularis*. Figs. 2, 3, abdominal appendages and 4, genital lobe of ♂, Manchester, Maine, July 7, 1898, Miss M. Wadsworth, coll. Fig. 5, superior appendages of ♂, Langford Lake, British Columbia, July 20, 1902, R. C. Osburn, coll.
- Figs. 6, 7, and 8. *Somatochlora arctica*. Figs. 6 and 7 abdominal appendages and fig. 8, genital lobe of ♂, Leuzerheide, July, 1904, K. J. Morton, collector.
- Figs. 9, 10, and 11. *Somatochlora forcipata*. Figs. 9 and 11, abdominal appendages, and fig. 10, genital lobe of ♂, Grand Lake, Newfoundland, July 21, 1901, D. A. Atkinson, collector.
- Figs. 12 and 13, *Somatochlora alpestris* abdominal appendages of ♂, Leuzerheide, July, 1904. K. J. Morton, collector.

* *Franklini* is known to me only from the description of the ♀.



NEWFOUNDLAND ODONATA, WILLIAMSON.



NEWFOUNDLAND ODONATA, WILLIAMSON.

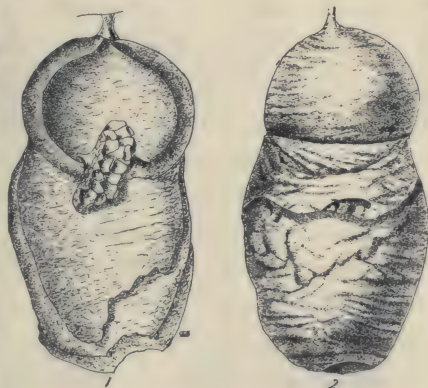
- Figs. 14, 15, 16, and 17. *Somatochlora hudsonica*. Figs. 14, 15 and 16, abdominal appendages of ♂, Grand Lake, Newfoundland, July 21, 1901, D. A. Atkinson, collector. Fig. 17, vulvar lamina of ♀, Bay of Islands, Newfoundland, July 7, 1901, D. A. Atkinson, collector. This female has the abdomen laterally crushed.
- Figs. 18, 19, and 20 *Somatochlora albicincta*. Figs. 18 and 19, abdominal appendages of ♂, Kukak Bay, Alaska, June, 1899, T. Kincaid, collector. Fig. 20, vulvar lamina of ♀, Kadiak, Alaska, July 4, 1899, M. Cole, collector.
- Fig. 21. Vulvar lamina of *Somatochlora semicircularis* ♀, mountains of Southwestern Colorado, 11,000-12,000 feet.

An Emergency Case in Insect Architecture.

By S. ARTHUR JOHNSON.

Last fall I discovered a *Vespa* nest attached to the north end of the entomology building. Attracted by its curious form, I secured it and was surprised to find that it represented an insect tragedy. From the location of the nest and its form, it is evidently one made by *Vespa diabolica*, though no insects were found in it to confirm this statement.

The nest had been begun in the usual way and reached the stage where two layers of paper formed a sphere about a comb containing a number of cells. At this time, the cord of suspension gave way, dropping the comb to the bottom of the nest, where, being unable to pass through the aperture on account of its size, it hung suspended in an inclined position. The wasp then



built on the lower half of the original sphere, a very much elongated structure, composed of about three very irregular layers. The exterior was unusually rough, and so insecurely attached that it broke away with very little handling of the nest.

Apparently this attempt to repair damages was not successful, for the work never advanced beyond this crude stage. One of the larvae, at least, reached the pupa stage, for its cocoon was found in the comb.

The incident is interesting as illustrating what an insect will do when brought face to face with a new condition.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., APRIL, 1906.

The recognition of the value of economic Entomology among the people is shown by the fact that two important bills for the suppression of insects are not unlikely to become laws. One is a bill to appropriate seventy thousand dollars a year for five years to suppress mosquitoes in New Jersey*, and the other is a bill presented in the National House of Representatives to appropriate two hundred and fifty thousand dollars to check the ravages of the Gypsy Moth. There can be no question of the value of properly directed scientific work against these pests, and we believe a large return could be had from the expenditure of the money, providing no human parasites work their way in. The very moment money enters into scientific work there will be some one with an eye on the main chance. Entomologists should religiously frown down all such attempts and endeavor to put the study on the highest plane and thus demonstrate its value to all.

A CORRECTION.—The larval stages described by Mr. J. G. Grundel in March, '05 NEWS as *Lemonias vigulti* are those of *L. mormo*, a closely allied species. Probably the preparatory stages of *vigulti* are similar, and what will apply to one will apply superficially to the other.—C. R. COOLIDGE, Palo Alto, Cal.

* This bill has become a law.

Doings of Societies.

Minutes of meetings of Brooklyn Entomological Society, held at the residence of Mr. George Franck, 1040 DeKalb Avenue, Brooklyn, N. Y.

November 5, 1905.—Thirteen persons present, the President in the chair.

Mr. George P. Engelhardt was elected librarian, *vice* Mr. Ernest Shoemaker resigned.

Mr. Franck exhibited a specimen of *Argynnis idalia*, from Newark, N. J., showing an extreme case of suffusion. The upper side of the primaries was heavily clouded, while that of the secondaries was almost entirely wanting in maculation. The under side of the wings was similarly affected, the secondaries having only a single row of silver near the inner margin and a few near the base. Mr. Franck also exhibited a ♂ *Hyperchiria io*, the wings of which largely partook of the coloration of those of the ♀.

Mr. Schaeffer presented a number of specimens of coleoptera comprising species not only new to our fauna but to science, which he had taken during the recent summer in the Huachuca Mountains, Arizona. Among those shown were *Amblychila baroni*, *Cicindela obsoleta* var. *santaclarae*, *Pasimachus viridans*, *Clerus*, *n. sp.*, *Romaleum*, *n. sp.*, *Oncideres*, *n. sp.*, *Cassida mexicana*, *Estola*, *n. sp.*, *Agrilus*, *n. sp.*, and a number of species of *Scarabæidae*. *C. santaclarae* occurred in company with swarms of grasshoppers, which, being similar in color (green), rendered distinction difficult.

Mr. Schaeffer gave some further details relative to his method of preservation of specimens and mode of living. A tent was made for shelter which at times barely sufficed to protect the collections and apparatus from rain.

December 7, 1905.—Seventeen persons present, the President in the chair.

Mr. Franck announced that a sufficient number of subscriptions had been obtained to ensure the publication of the Glossary of Entomological Terms prepared by Prof. John B. Smith.

Mr. George P. Engelhardt gave a description of his manipu-

lation of and experiences with a hive of bees located in the Children's Museum of the Brooklyn Institute of Arts and Sciences. The hive was placed at a window facing east and connected with the outer air by a covered passage and was specially constructed for observation, having inner sides of glass through which the operations of the inmates were visible. Exterior doors of wood screened the interior glass sides from light when not subject to inspection. Although in the midst of a city the bees had no difficulty in collecting materials for honey, comb, etc., apparently obtaining sufficient for their purposes from the vegetation in streets and yards and the nearby park.

ARCHIBALD C. WEEKS, *Secretary*.

DR. DYAR's Editorial in the March, 1906, Jour. N. Y. Ent. Soc. is a work of art. He says I attempt a misrepresentation of his Review of the Hesperidæ. I did nothing of the kind; I only stated facts which any entomologist can verify from the literature. Dr. Dyar says "We *presume* he is right in both cases." Why does he say "presume" and then proceed to *try* and correct his errors? He does not come out and say his genus *Anatrytone* is a synonym, but says *Atrytone* may be given another name. I quote again, "the mistakes can be easily corrected by transferring *manataaqua* to *Thymelicus* and proposing a new name for *Atrytone*." Had Dr. Dyar really known anything about the genera he would never have suggested anything of the kind, as *manataaqua* is the type of Scudder's genus *Limochroes*. Dr. Dyar uses this genus and places nine species under it, including the type *manataaqua*. *Aëgrescit medendo*.—HENRY SKINNER.

Lady Bug gave a party,
It was a grand affair;
The finest Beetle dandies
And the nattiest Gnats were there.

The Glow Worm glowed his brightest
And the Hornet played his horn,
The Butterfly brought butter
And the Miller Moth brought corn.

The Caterpillar sat and purred,
The Horsefly galloped high,
The Ants came with their uncles
And the Spiders came with pie.

The June Bug in his buggy came,
Dragged by the Dragon Fly,
The Centipede gave his last cent
To see the pair go by.

It was a splendid party,
But when the last was done,
The Hop-toad sat outside the door
And swallowed every one.



AESHNA CONSTRICTA SAY.

MALE TO LEFT. FEMALE TO RIGHT.

(SEE CALVERT, P. 148.)

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

MAY, 1906.

No. 5.

CONTENTS:

Williamson and Calvert—Copulation of Odonata	143	McClendon—Notes on the True Neuroptera.....	169
Skinner—A new Ichneumonid.....	150	Banks—On the Perlid genus Chloroperla.....	174
Nason—Parasitic Hymenoptera from Algonquin, Illinois—IV.	151	Rowley—Notes on Papilio ajax.....	175
Hart—Notes of a winter trip in Texas, with an annotated list of the Orthoptera	154	Kunze—Stemmed cocoons of Telea polyphemus.....	177
Fall—On the genus Trachykele, with notes and descriptions of other North American Buprestidae.....	160	Editorial.....	180
		Notes and News.....	181
		Doings of Societies	182

Copulation of Odonata.

I.—By E. B. WILLIAMSON.

In ENT. NEWS, February, 1899, page 42, I questioned, for the first time, the accepted statement that in pairing the male dragonfly grasps the female by the prothorax. No observations by others, so far as I know, have confirmed or corrected this observation which pointed out that, in some of the Anisoptera at least, the female was grasped by the head. Observations made during the season of 1905 permit the recording of some details in the method of "coupling" in the suborder Zygoptera. The procedure, for the sake of clearness, may be classified and subclassified as follows:

A.—The two jaws of the pincers by which the male grasps the female, formed by (1), the superior appendages, and (2), the inferior appendage. In couple the inferior appendage rests on top of the head, and the superior appendages on the rear of the head of the female. SUBORDER ANISOPTERA. Positive observations in the case of *Celithemis*, *Sympetrum*, (Libellulinae), *Gomphus* (Gomphinae), and *Aeshna* (Aeshninae).

AA.—The two jaws of the pincers by which the male grasps the female, formed by the two superior appendages, acting forceps-like, or by the inferior appendages, acting in a similar manner. In the case of certain species, judging from the form of the appendages, superior appendages and inferior appendages each act as a pair of forceps, so the female is doubly secured. Also it must be noted that the two superiors acting together may form one jaw of a pair of pincers, the other jaw of which is formed by the two inferiors. In couple the superior appendages of the male rest behind, and the inferior appendages in front, of the hind margin of the pronotum of the female. SUB-ORDER ZYGOPTERA.

B.—Superior appendages of the male forming two jaws, in couple grasping the most anterior portion of the mesepisternum and the mesostigmal laminae of the female.

C.—Inferior appendages of the male in couple extended over the dorsum of the pronotum of the female, scarcely or not touching it, and with their apices resting against the rear of the head. When the abdomen of the male was disturbed the inferior appendages in some cases did not touch the head of the female, in other cases the tips of these appendages were extended to the top of the female's head. Undisturbed they rested against the rear of the occiput, performing no work of grasping whatever. All female Zygoptera observed when in couple keep the prothorax drawn tightly against the mesothorax. *Lestes*. Positive observations in the case of *L. forcipatus* and *L. unguiculatus*.

CC.—Inferior appendages of the male resting on the anterior side of the hind lobe of the prothorax of the female. *Heterina*.

BB.—Inferior appendages forming two jaws which grasp the anterior surface of the hind lobe of the pronotum of the female, the superior appendages resting in cups formed by depressions in the mesostigmal laminae and the rear surface of the hind lobe of the pronotum and, depending on their form, grasping the mesostigmal laminae or not. The female by drawing the hind lobe of the pronotum closely against the mesostigmal laminae prevents the escape of the male.

D.—Dorsum of apex of segment 10 of male modified to form a brace against the middorsal carina or its fork or the cavity in the fork. *Anomalagrion*, *Ischnura*, *Enallagma*.

DD.—Dorsum of apex of segment 10 of male with a viscid pruinose tubercle on either side which attaches itself to the mesepisternum of the female on either side of the fork of the middorsal carina, the tubercle which corresponds to the inferior appendage of Anisoptera engaging the cavity in the fork between the mesostigmal laminae. *Argia* (*putrida* and *apicalis*).

In Proc. U. S. Nat. Mus. Vol. XXVIII, p. 175, I have discussed pruinescence as a sex mark and signal. The pruinescence of the apical abdominal tubercles of male *Argias* serves another purpose, i. e., that of making more secure the coupling of the sexes. Females separated from the males usually have a whitish spot on the mesepisternum where the tubercles of the male have rested. The above description in coupling in group BB shows at once the reason of the inability of the male to release the female at will. How secure this coupling is may be known from the fact that I once captured a female *Enallagma exsulans* to whose thorax was attached the last nine abdominal segments of the male. Possibly a bird or fish had snapped away the remainder of the body of the male.

The above notes are tentative in so far as I have positively examined coupling in a limited number of species. To what extent the superior appendages of the male grasp the mesostigmal laminæ of the female in Agrioninæ is difficult of determination. In local species I believe it is very slight, though the appendages, of course, rest securely against the laminæ, so held by the pronotum. In many species of *Enallagma* and *Ischnura* the presence of hooks or teeth on the inferior surface of the superior appendages indicates that these appendages engage closely the rear surface of the hind lobe of the pronotum where they would be held securely by the opposite pressure of the inferior appendages on the anterior surface of the hind lobe of the pronotum.

“ Though the subject of Odonate copulation has been considered by many authors with ‘ presque toujours une description détaillée et souvent poétique,’ I have been unable to find any statement concerning the filling of the seminal vesicle of the male dragonfly, other than that this takes place before copulation. In the case of *Calopteryx*, *Argia* and *Enallagma*, where I have been able to make positive observations, the male fills the seminal vesicle at once after he has captured the female. It seems probable that during the wild flight of mating Aeshnas and some of the Gomphines (I have noticed especially *Dromogomphus spoliatus*) the seminal vesicle is being filled, and, this

accomplished, the pair come to rest in tree-top, on the ground, or where not, and copulation takes place."—Williamson, Proc. Ind. Acad. Sci., 1901, p. 125.

In the final act of copulation still other harmonious relationships of parts are necessary. The abdomen of the female must be curved forward and upward and its apex brought into proper position to the accessory genitalia of the second abdominal segment of the male. Often this is accomplished only after repeated trials, and sometimes there is failure to copulate. Any deformity in the grasping apparatus of the male which would tend to hold the female out of proper position, though admitting of securely retaining her, or any malformation of the female's thorax or head, having the same effect, might prevent copulation. Abdominal length or brevity of abdomen of either sex might also prevent it. Crooked abdomens or the absence of free articulation of abdominal segments might have a prohibitive effect. And, if the apex of the female abdomen is brought into position with the accessory genitalia of the male, it yet remains, before copulation can take place, that these parts should be mutually adapted to each other. So, to sum up, the Odonata, in the securing of the female, the filling of the seminal vesicle and the final act present an example of copulation possibly unique in the complexity of its accomplishment. This complexity explains at once the isolation which certain species enjoy though associated with numerous congeners of similar habits. That such species with their complex sexual adaptations appeared by mutation is almost inconceivable. Geographical isolation and gradual modification offer a more plausible explanation.

Various factors contribute to the preservation of related species when brought in contact with each other in a restricted area. The factor above discussed, *i. e.*, complexity of the sexual act, is almost inoperative probably in the genus *Libellula* for example. Here there is considerable uniformity in size and great uniformity in the structure of all parts concerned in copulation. But the males fight for the females in the open, over the water or above the reeds; and it is possible

for a novice in entomology to readily identify our *Libellulas* with a key based on wing markings. Again in many of the Calopteryginæ there is great uniformity in the parts concerned in copulation but great diversity of wing markings. The genera *Rhinocypha* and *Calopteryx* may serve as examples, and in both it has been shown that the sexes are attracted to each other by movements and displays of color. On the other hand, the species of *Sympetrum*, which are, with a few exceptions, very uniformly colored and without wing markings, have some diversity in the form of the abdominal appendages of the male and great diversity in the accessory genitalia of the male and the vulvar lamina of the female. These differences reach a maximum of development in the swift-flying Somatochloras which are, with one or two exception, without wing markings and with bodies uniformly colored, but which show a remarkable diversity in the abdominal appendages of the male and the vulvar lamina of the female. In the Agrionines and *Lestes*, species generally with colorless wings and weak flight, there is great diversity in the structure of the male appendages and the female thorax. Upon these parts to a great extent all authors have based the most satisfactory definitions of species. That there is a fundamental difference in the factors which contribute to or determine the preservation of species, and that among certain species this factor is the complexity of the sexual act, and among others it is the possession of obvious external characters, determined possibly by sexual selection, is suggested by a comparison of Dr. Calvert's treatment of the genus *Argia* (Agrioninæ) in the *Biologia Centrali-Americana*, and DeSely's treatment of *Rhinocypha* (Calopteryginæ) in the *Synopsis des Calopterygines* and its *Additions*. In the Agrionine genus *Enallagma* there is considerable uniformity in the size of species. The species of the genus *Lestes* vary more in this particular. It is in the Agrionines possibly that the most diverse forms of abdominal appendages are found, though the Gomphines (almost uniformly colorless-winged species) have these parts developed in extremely different manners. The Aeschnines, most of which have colorless wings, have considerable diver-

sity in these parts, and many species have the body colors very brilliantly and diversely developed.

In the genus *Gomphus* as it occurs about my home at Bluffton, Indiana, it may be noted that all species are colorless-winged; certain ones are of about the same size; these certain ones occur at the same season, at the same place, have apparently identical habits and are very similar in body markings. Under these conditions the complexity of the copulatory act is probably the only barrier to the free intermingling of these species. I have already in the ENT. NEWS described a hybrid of *graslinellus* and *sordidus*; and during the season of 1905 a number of specimens were taken which, in the opinion of Dr. Calvert and myself, are specifically indeterminable, combining characters of both *crassus* and *fraternus*, two closely related species in which the abdominal appendages of the males are very similar. Both species were flying at the ripple where the indeterminable specimens were taken. Dr. Kellicott once remarked that he could not understand how, among the *Enallagma*s at Cedar Point, Ohio, the males could recognize their own species of the opposite sex, and he studied many specimens carefully but without discovering any evidence of hybridization so far as I know. The coupling of different species has been reported a number of times but I know of no record of copulation. However, near Bluffton, *Enallagma civile* and *carunculatum*, two species with very similar appendages are brought in contact in numbers about a 6-acre pond. I have studied probably 500 males from this pond, and have found a few specimens (20-30 possibly) which were clearly intermediate.

II. BY PHILIP P. CALVERT.

(With Plate VII)

Mr. Williamson has asked me to add any notes or suggestions which occur to me on the subject of his paper.

I can confirm his observations in the cases of *Aeshna constricta* and *Sympetrum vicinum*. The former is illustrated by Plate VII, based on a photograph from specimens in my collection labeled, "Taken in this position (of copulation) Oct. 1,

1893. Ridley Twp., Del. Co., Pa. P. P. Calvert, collector." I cannot find any notes made on this pair, but their history, as far as I can recall it from memory, is as follows: In the afternoon of the day mentioned, I saw a pair flying together in the position represented by Plate VII and alighting on the branch of a tree close to the ground. Approaching cautiously, I was able to seize one with my right hand, the other with my left at the same instant, without pulling them apart, or without the insects themselves separating. The capture occurred near the house and some one of the family poured a few drops of benzine on the insects, while I held them in position, until this substance killed them. Each was pinned to the same piece of cork which serves as a common mounting block, while a stouter pin thrust through the cork enables the pair to be moved about as one specimen. Some years later, Dermestids got access to them and made large cavities in the eyes of both, but, fortunately, did not injure the specimens seriously otherwise, before the depredations were discovered. Dr. Skinner then kindly made a photograph of the pair lest other injury be done, and the prints have been in my possession for some years. Excepting the damage referred to, the specimens themselves are in good condition. In only one detail does the copulatory position seem to have been lost: the appendages of the male are no longer in actual contact with the head (due probably to some contraction of the abdominal muscles and to shrinkage from drying of the tissues), although they retain the angular divergence which corresponds with Mr. Williamson's description. The shadows, which appear around the head of the female in the photograph, obscure the details to such an extent that I have shown these in outline on the plate, on the same scale, by a drawing made directly from the insects.

Perhaps a photograph made of living Odonata while pairing may reveal some differences from what is here shown on Plate VII, and some entomologist may be fortunate enough to secure such a view. That it is often not difficult to approach these insects at this time, and at short range, is shown also by the fact that on August 29, 1895, at Interlaken, Switzerland, I caught a

similar pair of *Aeshna cyanea* in my fingers, although I was not able to preserve their positions.

Finally, I can confirm Mr. Williamson's observations in the case of *Sympetrum vicinum*, at Philadelphia, November 6, 1900, and at Lake Hopatcong, New Jersey, September, 1902. In September, 1905, at Loch Bonnie, near Lake Placid, in the Adirondacks, New York, I attempted to make exact observations on the method of holding the female in *Lestes forcipatus* Ramb., but all that I could determine was that the terminal appendages of the male grasped the female's prothorax, the superior appendages on its posterior, the inferior appendages on its anterior, surface.

A New Ichneumonid.

BY HENRY SKINNER.

Metopius harbecki n. sp.—The following markings are yellow: Margin of facial shield, apical half of scutellum, a dot on postscutellum, the first abdominal segment, a small triangular patch on apex of the third dorsal abdominal segment, the apical margin of the fourth dorsal, third coxæ at apex and outer half of sides, third trochanters and small spot at apex of third femora.

The nearest ally to this distinct species is *pollinctorius* Say. Described from one specimen taken by Mr. H. S. Harbeck at Germantown, Philadelphia, on September 25, 1904. The type is in the collection of the American Entomological Society.

DR. SAMUEL G. DIXON, President of the Academy of Natural Sciences and Health Commissioner of Pennsylvania, has directed Mr. Henry L. Viereck to make a mosquito survey of the State.

LAST SUMMER, while collecting in a swamp, a skipper, *Pamphila metacomet*, alighted on my hand, turned its abdomen upward and the tip forward and discharged a small drop of colorless fluid on my hand. This it eagerly sucked up through its proboscis, repeating the operation not less than half a dozen times. I then placed the cyanide bottle over it. As soon as its struggles had ceased, I took it from the bottle, pressed the abdomen, and obtained a drop of the fluid. It was tasteless, possibly slightly sweet. This may be a common habit, but I have never happened to observe it before.—E. B. WILLIAMSON, Bluffton, Indiana.

Parasitic Hymenoptera of Algonquin, Illinois.—IV.*

By WM. A. NASON, M. D.

(Continued from page 172, Vol. xvi, No. 6)

CHALCIDIDÆ.

Leucospis affinis Say.

June 13, 21. Aug. 12, 1895.

June 4, 1896.

10 specimens, ♂ ♀.

Smicra torvina Cress.

Oct. 8, 1893.

Aug. 31, 1894.

May 29. July 25, 1895.

6 specimens, ♀.

Smicra delumbis Cress.

Sept. 21, 1894.

July 3, 1895.

2 specimens, ♂ ♀.

Smicra rufofemorata Cress.

1 specimen, ♂.

Smicra flavopicta Cress.

Sept. 21, 1894.

1 specimen, ♀.

Phaegonophora sulcata Westw.

2 specimens, ♀.

Chalcis ovata Say.

July 16, Aug. 1, 1895.

6 specimens, ♂ ♀.

Chalcis flavipes Fabr.

3 specimens, ♀.

Haltichella xauticles Walker.

Sept. 6, 1895.

1 specimen, ♀.

Perilampus cyaneus Brullé.

July, 8, 1894.

July 3, 24, 25, Sept. 17, Oct. 5,
1895.

10 specimens, ♀.

Perilampus platygaster Say.

Aug. 21, 30, 1894.

July 25, 1895.

3 specimens, ♀.

Perilampus fulvicornis Ashm.

Sept. 4, 1894.

1 specimen, ♀.

Perilampus hyalinus Say.

Sept. 21, 1894.

June 13, 14, July 29, Aug. 16,

Sept. 17, 1895.

8 specimens, ♂ ♀.

Lamprostylus nasonii Ashm.

June 4, 1895.

2 specimens, ♀.

Co-types, types in Ashm. coll.

Eurytoma auriceps Walsh.Sept. 27, Oct. 16, 18, 22, 27,
1895.

5 specimens, ♂, ♀.

Eurytoma bicolor Walsh.

Sept. 15, 1895.

1 specimen, ♀.

Eurytoma diastrophii Walsh.

Sept. 10, 15, Oct. 3, 1895.

4 specimens, ♂, ♀.

Eurytoma prunicola Walsh.

Sept. 21, 1894.

June 11, 1895.

2 specimens, ♂, ♀.

Eurytoma tylodermatus Ashm.

Aug. 23, 1894.

1 specimen, ♀.

Bruchophagus funebris Howard.

Aug. 24, 1895.

1 specimen, ♀.

Decatoma nubilistigma Walsh.

July 19, 23, 1895.

2 specimens, ♀.

Isosoma hordei Harris.

July 3, 1895.

1 specimen, ♀.

* Determinations were made by Dr. Wm. H. Ashmead, of Washington, D. C.

- Monodontomerus montivagus* Ash.
June 9, 10, 1894.
7 specimens, ♀.
- Syntomaspis brodei* Ash.
Sept. 8, 1894.
1 specimen.
- Syntomaspis elegans* Prov.
1 specimen, ♂.
- Torymus omnivorus* Ashm.
May 4, 1895.
1 specimen, ♂.
- Torymus diamonoides* Ashm.
June 7, 13, 1895.
2 specimens, ♀.
Co-types, types in Ashm. coll.
- Ormyrus querci* Fitch.
Oct. 2, 1905.
2 specimens, ♂, ♀.
- Ormyrus ventricosus* Ashm.
May 4, July 3, 1895.
2 specimens, ♀.
- Eupelmus allynii* French.
July 18, 26, 27, Oct. 27, 1895.
4 specimens.
- Bothriothorax peculiaris* Howard.
Aug. 8, 1895.
1 specimen, ♀.
- Spalangia aenea* Say.
April 25, May 7, 1895.
2 specimens, ♀.
- Spalangia rugosicollis* Ashm.
July 9, 1894.
1 specimen, ♀.
- Spalangia drosophilæ* Ashm.
Aug. 26, 1894.
1 specimen, ♀.
- Halticoptera trypetæ* Ashm.
May 9, 1894.
April 30, May 3, 1895.
3 specimens, ♂, ♀.
Co-types, types in Ashm. coll.
- Trigonoderus maculatus* Ashm.
Sept. 19, 1895.
2 specimens, ♀.
Co-types, types in Ashm. coll.
- Caratomus megacephalus* Dalm
June 29, 1894.
June 2, 8, 1895.
May 12 to June 29, 1896.
29 specimens, ♂, ♀.
- Merismus texanus* Ashm.
Sept. 17, 1895.
1 specimen, ♀.
- Syntomopus affinis* Ashm.
Sept. 15, 1895.
1 specimen, ♀.
- Syntomopus americanus* Ashm.
June 17, 27, 1895.
2 specimens, ♀.
- Pachyneuron allograptae* Ashm.
Sept. 22, 1895.
1 specimen, ♀.
- Pachyneuron micans* Howard.
Aug. 22, 1894.
1 specimen, ♀.
- Pachyneuron siphonophoræ* Ash.
1 specimen, ♀.
- Merisus destructor* Say.
July 28, 1894.
1 specimen, ♂.
- Bæotomus rufiviventris* Ashm.
Oct. 2, 1895.
1 specimen, ♀.
- Habrocytus thyridopherygis* Ashm.
May 22, Sept. 22, 27, Oct. 3, 1895.
6 specimens, ♀.
- Hypopteromalus tabacum* Fitch.
July 10, Sept. 27, 1895.
2 specimens, ♀.
- Epipteromalus algonquinus* Ashm.
June 27, July 3, 6, Sept. 27, 1895.
4 specimens, ♀.
Co-types, types in Ashmead coll.
- Pteromalus commæ* Ashm.
July 3, 1895.
1 specimen, ♀.
- Pteromalus graptæ* Ashm.
May 15, 25, July 4, Aug. 18, Oct. 17, 1894.

- May 10, Sept. 1 to 22, Oct. 2
to 29, 1895.
67 specimens, ♂, ♀.
Pteromalus incongruus Ashm.
Oct. 3, 27, 1895.
2 specimens, ♀.
Co-types, types in Ashm. coll.
Pteromalus puparum Linn.
May 7, 9, 16, 1895.
14 specimens, ♀.
Pteromalus vanessæ Harris
Sept. 4, 1894.
July 3 to 25, Sept. 22, 27, 1895.
7 specimens, ♀.
Meroporus calandræ Howard.
June 9, 30, July 3 to 15, Aug.
23, 1894.
Sept. 5, 17, 1895.
11 specimens, ♂, ♀.
Neocatolaccus tylodermæ Ashm.
Aug. 20, 1894.
June 19, 28, Aug. 16, 1895.
5 specimens, ♀.
Catolaccus nigroaepæus Ashm.
July 10, 1895.
1 specimen, ♀.
Catolaccus incertus Ashm.
Oct. 27, 1895.
1 specimen, ♀.
Catolaccus anthomyiæ Ashm.
June 7, Oct. 16, 1895.
2 specimens, ♀.
Arthrolytus clisiocampæ Fitch.
June 4, Aug. 7, 1894, Sept. 27,
Oct. 2, 1895.
4 specimens, ♀.
Cælopisthus suborbicularis Prov.
April 21, July 3, Sept. 17, 19,
1895.
4 specimens, ♀.
Euplectrus catocalæ Howard
June 20, 1895.
1 specimen, ♀.
Miotropis clisiocampæ Ashm.
Aug. 2, 31, 1894.
2 specimens, ♀.
- Cirrospilus flavicinctus* Riley.
June 2, Sept. 22, 27, Oct. 2, 1895.
4 specimens, ♀.
Cirrospilus flavimaculatus Ashm.
Sept. 27, 1895.
2 specimens, ♀.
Melittobia pelopæi Ashm.
May 28, June 2, July 18, Aug.
15, Sept. 15, 17, 1895.
7 specimens, ♂.
Sympiesis tischeriæ Vrch.
Sept. 27, Oct. 16, 1895.
2 specimens, ♀.
Sympiesis dolichogaster Ashm.
Sept. 20, 27, 1895.
3 specimens, ♀.
Sympiesis quercidæ Ashm.
Oct. 16, 1895.
1 specimen, ♀.
Sympiesis chenopodii Ashm.
Oct. 2, 1895.
1 specimen, ♀.
Uriella rufipes Ash.
June 26, July 3 to 28, Aug. 11,
22, 1894.
May 4, 9, 48, June 15, July 8,
Aug. 34, Sept. 17, 1895.
Co-types, types in Ashmead coll.
Metapachia acutiventris Ashm.
May 22, Sept. 19, 1895.
2 specimens, ♀.
Co-types, type in Ashmead coll.
Nasonia brevicornis Ashm.
May 11, June 12, July 3, 1895.
3 specimens, ♀.
Co-types, type in Ashmead coll.
Eutodon lithocolletidis Ashm.
Aug. 1, 1895.
1 specimen, ♂.
Asecodes quercicola Ashm.
July 10, 1895.
1 specimen, ♂.
Omphale livida Ashm.
Sept. 15, 1895.
1 specimen, ♀.

Chrysocharis albitarsis Ashm.

Aug. 1, Oct. 2, 6, 1895.

4 specimens, ♂, ♀.

Solenotus bimaculatus Ashm.

Sept. 27, 1895.

1 specimen, ♀.

Co-types, types in Ashmead coll.

Solenotus pulchripes Ashm.

Sept. 27, Oct. 2, 3, 1895.

Co-types, type in Ashmead coll.

Tetrastichus racemariæ Ashm.

July 7, 1894.

1 specimen, ♀.

Tetrastichus sp. ?

Sept. 27, Oct. 27, 1895.

4 specimens, ♂.

Tetrastichus sp. ?

Oct. 2, 1895.

2 specimens, ♀.

Closterocerus niger Ashm.

June 25, 1894.

1 specimen, ♂.

Co-type, type in Ashmead coll.

Rileyia cecidomyiæ Ashm.

Aug. 16, 1865.

1 specimen, ♀.

EVANIIDÆ.

Hyptia reticulata Say.*Gasteruption incertus* Cress.

Notes of a Winter Trip in Texas, with an Annotated List of the Orthoptera.

BY CHARLES A. HART, Urbana, Ill.

In late December and early January I had the pleasure of briefly studying the insect-life of four unlike Texan localities. For valued assistance in this undertaking, I wish to express my thanks to my relative, Prof. E. C. Green, and to Prof. A. F. Conradi, both of the Texas Agricultural and Mechanical College; to the Houston and Texas Central Railroad; and to Mr. A. P. Atwater, of Houston.

The first six days, December 22-27, were spent in the vicinity of the College, in Brazos County, 150 miles inland from the Gulf. The soil is clayey or sandy upland, partly covered with a scrubby forest, mostly post oak, and intersected by shallow grassy ravines. On December 28th and 29th I was in the broad bottom lands of the Brazos River, in the same county, areas of heavy forest, alternating with large fields of cotton, alfalfa, etc. January 3d and 4th saw me at work along the low open grassy outer shore of Galveston Island, near the west end of the great sea wall; and the 5th and 6th, in the coastal plain at Houston, fifty miles inland, west of the section called Houston Heights, in the vicinity of

the head of a small steep-sided ravine, running to the Buffalo bayou near by, the surroundings being a sparse forest, mostly loblolly pine.

The conditions were essentially those of late October in Illinois. The grass and weeds were dead, as a rule, and the deciduous trees leafless. A few frosts had previously occurred. The weather on the above days was sunny and warm at mid-day, giving a brief collecting period from about 11 A. M. to 3 P. M., when a few insects were seen moving about in the sunshine.

Of the Hymenoptera, two or three parasitic species were noted, and a few *Polistes pallipes* at Houston. The common stinging ants about College Station, *Pogonomyrmex comanche*, were seen about their low mounded nests. Occasional Muscidae and three or four butterflies were observed. A single species of dragonfly (*Sympetrum*) and a prettily banded *Panorpa* were taken several times. Two tiger-beetles and a few *Eleodes* were found sunning themselves. Among Hemiptera there were taken a few pentatomids and a large coreid (*Acanthocephala declivis*). The only plant-feeder which appeared to be definitely at work was a small *Clastoptera*-like species swept from the fresh green pine leaves. A bovine skull lying on the ground at the Houston locality revealed the openings of several large round burrows beneath it. Upturning the loose soil with a stick, a number of *Geotrupes* were thrown out. *Dermestes* and *Silpha* were noted on animal remains at Galveston.

Insects under bark, logs, etc., seemed not especially numerous. They were mostly of the usual familiar types, though often of unfamiliar species. At Galveston nearly all wood fragments had been swept away, except a line of driftwood near the inner edge of the beach, which was destitute of insect life, and only stone and metal debris remained. These gave some interesting Nabidae and Tenebrionidae, however, and an old pair of pants by a pasture fence proved quite a treasure-house. *Lacon rectangulus* and *Opatrinus aciculatus* were common, both here and at College Station. The remaining principal hibernating forms seen were Carabidae, *Termes*,

Disonycha, Reduviidæ, Aradidæ, ants, and sluggish, immature scorpions.

The Orthoptera received especial attention. The previous frosts had apparently killed all grasshoppers in level, open lands and other exposed situations, but they were still fairly common where protected by trees, weeds, brush, or sloping banks, as in the grassy hollows about College Station. At Galveston they were somewhat more generally distributed. Out of about 1,200 insects collected, over 800 were Orthoptera. The largest collection of Orthoptera in any one day came from the Houston locality, where 108 were taken on January 6th. No Phasmidæ or Mantidæ were observed in any stage, and the Locustidæ were represented only by a few *Conocephalus*, some of these being under shelter, as if hibernating. Some of the 'hoppers were getting pretty ragged, but in general they were in fair condition. The following is an annotated list of the species, including some other Texas records. These are mostly from specimens received from Mr. Conradi, now in the collection of the Illinois State Laboratory of Natural History, in which all the above material has been placed. The four localities are cited by their initials, using "B." for the Brazos River bottoms. The dates have already been given for each place, and need not be stated in detail.

LIST OF THE ORTHOPTERA.

Anisolabis maritima Bon. B., 19 adults and nymphs. Under logs about farm buildings, near the high river-bank. New to Texas, and unusual so far inland.

Labia burgessi Scudd. H., 9 adults, 8 nymphs. Found under the loose bark of a large fallen pine, in company with the next species, from which it scarcely differs, except in the obtected and apparently functionless wings, and the smaller tegmina. A Florida species, new to Texas.

Labia guttata Scudd. H., 3 adults, 9 nymphs. Found with the preceding, as stated.

Ischnoptera? spp. C., B., G., 7 nymphs. Under boards, etc.

Kakerlac americana Scudd (*Loboptera*). "Tex." (Bolter Coll.) New to Texas.

Periplaneta americana Linn. G., 4 examples; C. (Coll. I. S. L. N. H.) This is the dominant roach in Houston and Galveston.

Oligonyx scudderi Sauss. C. (Coll. I. L. N. H.)

Paratettix texanus Hanc. C. (Coll. I. S. L. N. H.); H., 3, more seen. Near the small stream.

P. texanus nanus Hanc. H., 2. This is quite possibly a distinct species.

Tettigidea lateralis Say. C. (Coll. I. S. L. N. H.); H., 1.

Syrbula admirabilis Uhl., October 28th (Coll. I. S. L. N. H.)· H., 1. Much larger than Illinois examples.

Mesochlora abortiva Brun. C., 14 ♂, 28 ♀, 1 young; B., 4 ♀. One of the commonest species about College Station, on the dry, thinly grassed sides of stream hollows.

Mesochlora unicolor n. sp. C., 8 ♂, 11 ♀; B., 1 ♂. Associated with the preceding, and not differing appreciably from it except in the dorsal sculpture and coloration; the two not intergrading, however, in the series obtained.

Readily recognized by the uniform gray of the tegmina and dorsal surfaces of head and pronotum, the lateral carinae uniform throughout, not partly swollen, at middle less sharply curved than in *abortiva*, and usually separated here by more than half the distance between them at the posterior margin. The pronotal lateral black spot and oblique carina are about as in *abortiva*.

In *abortiva*, on the other hand, there is a velvety black line on the tegmina, sometimes broken, and two straight stripes of this color on the head and pronotum above. On the pronotum these include the strongly clepsydral lateral carinae, the convergent portions of which are straight, swollen, and ivory-white, connected by a fine short arc, the carinae here separated by about half the distance between them on the posterior margin. Type in collection of Ill. State Lab. of Nat. Hist.

Amblytropidia occidentalis Sauss. C., 1; H., 23. Abundant among the pines, very elusive, flying short distances noiselessly and almost invisibly, the dorsal color closely matching that of the fallen pine needles.

Orphulella pelidna Burm. C., 24, 1 nymph; B., 1; H., 36; G., 6. Widely distributed and common in short grass. Galveston examples are mostly a little shorter winged and greener, suggesting the next.

O. picturata Scudd. C., 12; B., 6. With the preceding.

Dichromorpha viridis Scudd. H., 2. Green variety.

Arphia xanthoptera Germ. C., 1; H., 4.

A. simplex Scudd. H., 8 ex. With the preceding on dry sunny open spots in woods.

Chortophaga viridifasciata DeG. C., 12; B., H., 5; G., 10. Many others seen. The green form is rarer than in Illinois. Both sexes were seen to produce the crackling sound in flight. I was struck by the abundance and activity of both young and adults. They seemed thoroughly at home at this season.

Encoptolophus costalis Scudd. C., 3; B., 4; H., 1. On bare dry exposures of washed-out roads or stream banks.

Hippiscus rugosus Scudd. C., 1.

Dissosteira carolina Linn. B., 1.

Trachyrhachys fuscifrons Stal. (*Mestobregma*) C., 1. On low gravelly mound in stream bed.

Conoza amplicornis Caud. (*Psinidia sulcifrons amplicornis* Caud.) G., 1 ♂, 1 ♀. Among little sandy hillocks, in company with *Heliastus*. Described from a male and female from Victoria, Tex. Apparently a good species. Posterior edge of pronotum dorsally strongly concave each side, with a marked acute process at middle. Wings of female orange tinted. Pronotal carina deeply cut twice. The male is remarkably small; body 12.5 mm., tegmina 13 mm. antennæ 9 mm. Other characters just as described by Caudell.

Trimerotropis citrina Scudd. B., 5; G., 10. Common on the high banks of the Brazos, and on the sides of the canal at Galveston.

Heliastus sumichrasti subrosea Caud. G., 3. Found with the *Conoza*. The absence of the pronotal carina between the sulci is not always evident.

Brachystola magna Gir. Rescue, Tex., June 8th (Coll. I. S. L. N. H.).

Dictyophorus reticulatus Thunb. C., July 20th (Coll. I. S. L. N. H.).

D. marci Serv. C., May 15th; Wellborn, Tex., June 26th (Coll. I. S. L. N. H.).

Leptysma marginicollis Serv. G., 1.

Schistocerca americana Dru. C., 8; H., 3; G., 4; C. Aug. 8 and 22, and Nov. 18 (Coll. I. S. L. N. H.). Common about trees or bushes, flying to them when disturbed.

S. damnifica Sauss. H., 8. Flies up into trees as does *americana*, but is more inclined to be tricky and exasperating.

Paraidemonia mimica Scudd. C., 8; B., 1; H., 2; G., 3. In dry, sparsely grassy nooks.

Campylacantha acutipennis Scudd. C., 1; B., 1; Paris, Tex., Oct. 6 (Coll. I. S. L. N. H.). This is the infusate form, often found associated with *C. olivacea*, and doubtfully distinct from it.

Melanoplus atlantis Riley. B., 10; C., Oct. 28 (Coll. I. S. L. N. H.). In the corner of a bottom-land cotton-field, next to a farm yard, *Melanopli* were remarkably abundant, attracted, perhaps, by belated plants. The species were *atlantis*, *femur-rubrum* and *impiger*?

M. scudderii texensis, n. var. C., 18; B., 2; H., 15. Common in well-sheltered spots with moderately thick grass, associated with *M. plebejus*. The length of the furcula, not at all "exaggerated" in Scudder's figure*—in some cases fully one-third the length of the supra-anal plate—the more rounded tegmina, and the very distinct lateral stripe in both sexes, seem to entitle this to varietal rank. Type in coll. I. S. L. N. H.

M. femur-rubrum DeG. C., 2; B., 3; C., Oct. 28 (Coll. I. S. L. N. H.). Infrequent. One from each locality has glaucous hind tibæ.

*Proc. U. S. Nat. Mus., Vol. XX, Pl. XIV, fig. 6.

M. bispinosus Scudd. G., 4. Open pastures among grass and short weeds. The two males agree closely with Scudder's figure* but are considerably smaller than his. The metazona is short, decidedly shorter than the prozona. The larger male measures: body, 19 mm.; antennæ, 7.5 mm.; tegmina, 15 mm.; hind femora, 10.7 mm. The other is nearly one-fifth smaller.

M. impiger Scudd. ? B., 12; G., 11; C., Oct. 28 (Coll. I. S. L. N. H.). Found in open grassy ground; particularly abundant in the cotton field referred to under *atlanis*. All are females, including a number in the State Laboratory Collection, and a persistent search at each locality failed to disclose the male. In the Texas Agricultural College collection they are labeled *impiger*, but the description of this does not fit them very well.

M. plebejus Stal. C., 14; B., 16; H., 6. Associated with *M. scudderi texensis*; superficially similar, but with glaucous hind tibiæ and very unlike male structures. Those from B. were in margin of heavy forest, associated with *M. robustus*.

M. deletor Scudd. C., 1; H., 27. Grassy banks in forest. Near *luridus*, but larger. The cercal upper fork is bent up more than Scudder's key indicates.

M. differentialis Thom. C., 1; Wellborn, Tex., Aug. 25; Brazos R., July 20; C., Aug. 20 and Oct. 28 (Coll. I. S. N. H.).

M. robustus Scudd. Common in margin of heavy forest area on low, flat-bottom land, associated with *M. plebejus*.

Scudderella furcata Brunn. C., ♂, ♀ (Coll. I. S. L. N. H.). Tarsi, hind tibiæ, and tips of hind femora blackish, and the tympanum and posterior edge of tegmina fuscous. Genital structures as in *furcata*.

Microcentrum laurifolium Linn. C., Oct. 3 (Coll. I. S. L. N. H.).

Conocephalus fuscostriatus Redt. G., 1. In the folds of the before-mentioned old pair of pants.

C. mexicanus Sauss. H., 1; G., 1.

Xiphidium strictum Scudd. Wellborn, Tex., June 26 (Coll. I. S. L. N. H.).

Stipator cragini Brun. Wellborn, Tex., June 26 (Coll. I. S. L. N. H.).

Nemobius fasciatus vittatus Harr. B., 1.

N. socius Scudd. C., 3; B., 6; G., 2. Apparently the commonest *Nemobius* about cultivated land. In several species of this genus an intermediate form between the long and short-winged forms has been noted, in which the tegmina are as in the long-winged forms, the dorsal field slightly projecting behind, but the wings are absent—as in Lugger's figure of *fasciatus vittatus*. One of the *socius* is of this form.

N. funeralis, n. sp. C., one female. Rather small, almost wholly black, antennæ fusco-testaceous on basal half, except the basal joint, with a few black annulations; maxillary palpi black, the penultimate

*l. c., Pl. XIX, fig. 6.

joint fusco-testaceous; a faint dark testaceous margin in front of the eye, and a small spot anteriorly on the lateral lobe of the pronotum; abdomen above with gray spots in the usual pattern. Tegmina as long as head and pronotum, rounded and slightly oblique at tip, longitudinal veins prominent, cross-veins very feeble, lateral fields black, dorsal dark fuscous, a fine yellow line on vein at lateral margin of dorsal field, continued along apical margin of lateral field. Legs black, tibiae with testaceous interrupted line on upper face, first tarsal joint dark testaceous, black at tip; spines of hind tibiae testaceous at base and tip. Cerci fuscous; ovipositor short, black, nearly straight, distinctly denticulate, slightly exceeding cerci. Body 7.5 mm. long. Ovipositor 3.5 mm.; hind femora, 5.5 mm.; tegmina, 2.6 mm. Type in coll. I. S. L. N. H.

N. mexicanus Walk. C., 1.

N. carolinus Scudd. B., 1; H., 1 adult, 1 nymph.

Gryllus americanus Blatchl. B., 1; C. (Coll. I. S. L. N. H.). From what I have seen of this in Illinois, I should think it was clearly distinct. Scudder's description of *neglectus* is right for *pennsylvanicus*, but not for *americanus*.

G. pennsylvanicus Burm. G., 9; B., Mar. 22 (Coll. I. S. L. N. H.). Tegmina longer than in Illinois specimens, in the females fully reaching tip of abdomen. The B. specimen is long-winged. Of a large number of nymphs from under boards at C. and B., the majority are probably this species.

Ecanthus pini Beut. C. Coll. I. S. L. N. H.). This is the form near *4-punctatus*, but with a transverse bar on the basal antennal joint in place of the black dot, and assigned to the above species by Titus.*

On the Genus *Trachykele*, With Notes and Descriptions of Other North American Buprestidae.

By H. C. FALL.

TRACHYKELE Mars.

There is perhaps no genus of North American Buprestidae concerning which so little is positively known as the one here named. Specimens are very rare in collections, our literature is almost bare of allusions to them, and foreign literature offers little more to the inquiring student. The genus was described in 1865 by Marseul, who based it upon a single specimen, said to have been found in the Custom House at Paris, emerging from a cedar of Lebanon ("Sortant d'un cedre du Liban"), by M. Blondel.

* 23d Rep. Ill. State Ent., p. 218.

This locality seems to have been early discredited, for in the Catalogus of Gemminger and Harold (1869) the locality New Orleans is given for the species. I have been unable to discover the origin of this change, but it is doubtless connected with the fact that there is in the LeConte collection a pair of elytra fastened to the body of another Buprestide, and bearing the legend in Salle's handwriting "The elytra alone are from *blondeli*" and the locality label "Nlle Orleans."

In the Catalogus the *Buprestis lecontei* of Gory (1840) is also and properly referred to this genus, but with the locality "Am. Bor." instead of Mexico as originally given by Gory. Coming down to the "Biologia," the locality of *blondeli* has again been changed, for here we read—"Said to come from Mexico, but there is some doubt of the correctness of this locality. There is a single example in the British Museum without locality, here figured." This figure, Mr. Blanchard writes me, agrees very well with the elytra in the LeConte collection.

In his treatment of the Buprestidæ in Wytsman's Genera Insectorum, Kerremans states with apparent assurance that *blondeli* is from Mexico, and that it is identical with Gory's *lecontei*. It is difficult to know what to make of this statement, since Kerremans admits he has never seen a specimen of the genus and yet gives no authority for his assertion. He pronounces Gory's description as insufficient and his figure unrecognizable and not at all like that given by Waterhouse in the Biologia. Gory's description is short and unsatisfactory, it is true, but it is sufficiently characteristic to warrant our saying that the single examples of *lecontei* in the LeConte and Horn Collections—from Georgia and Louisiana—respectively, are the real thing and a very different thing from *blondeli*. The lack of correspondence between Gory's and Waterhouse's figures is not at all surprising.

Assuming that the *blondeli* elytra in the LeConte collection are correctly labeled, there yet remain two undescribed species from our Pacific Coast region, consideration of which has prompted this investigation. One of these is a green species resembling *blondeli*, and the few specimens known have, I be-

lieve, been so referred; the other, a dark bronzed form, is more like *lecontei*, and has so passed, but it is larger than that species, and in some other respects quite different. The following descriptions and notes will help to make these fine Buprestides better known to our collectors and students of our Coleoptera.

***Trachykele opulenta* n. sp.**

Green of varying brilliancy and with more or less evident golden or coppery glints at some part of the surface; disk of elytra maculate with small velvety black spots which vary much in size and number, but which show a tendency toward arrangement in longitudinal lines extending from the basal to the apical fourth. Upper surface glabrous and extremely densely not coarsely punctate; beneath with fine rather sparse whitish pubescence, densely punctate anteriorly, apical portion of abdomen more sparsely so. Front uneven, vertex impressed each side, carinate at middle. Prothorax nearly one-half wider than long, the length subequal to the width at apex, base a little wider, sides (superior lateral crest) broadly but distinctly angulate just behind the middle, disk with three anterior impressions and two large and deep posterior ones, the median lines sometimes narrowly smooth posteriorly and terminating in a small antescutellar fovea. Elytra about four times as long and one-third wider than the prothorax, humeri rather prominent; sides parallel to behind the middle, thence gradually narrowed; apex narrowly subtruncate and a little oblique; disk with from one to three short or incomplete sulci parallel with the suture, one or all of which may become nearly or quite obsolete. Sterna and first ventral segment very densely punctate and dull, following segments more sparsely finely punctate and shining, especially at middle. Length, 16-20 mm.; width, 5-6½ mm.

In the male the antennæ are a little longer than the head and prothorax; the front and middle tibiæ are slightly curved and denticulate within, and the fifth ventral is squarely truncate.

In the female the antennæ scarcely pass the base of the prothorax; the tibiæ are nearly straight and denticulate within, and the fifth ventral is rotundate-truncate.

Hab.—South Central Sierras of California to Washington (State). I have seen six examples (1 ♀, 5 ♂s) of this beautiful species, all but one of which were taken by Mr. Ralph Hopping in the Giant Forest region, Tulare Co., California. Of these Mr. Hopping writes, "One was beaten from the foliage of *Pinus lambertiana* at 6,000 ft.; others were caught flying in the Giant Forest at 6,400 ft., and one was cut from the burnt standing mast of a *Libocedrus decurrens* (Incense Cedar)

at 5,000 ft. This latter was in its own burrow and there would seem to be no doubt that *Libocedrus* is a food tree of the species." The sixth specimen bearing the label "Three Rivers, Cal." is from the same region, and was recently submitted without notes by Prof. C. F. Baker. I learn on inquiry that Mr. Fuchs has a single ♀ of this species from Seattle, Wash., and there is also a "W. T." example in the Horn collection. Miss Julia Wright has taken two examples at Towles, Placer Co., Cal., (fide Blaisdell). Dr. Van Dyke says, "I have never collected a live *Trachykele*, but have two green wing cases, one taken from, I think, a yellow pine stump at Sesson, Shasta Co., the other in Tuolumne Co." (California).

T. blondeli Mars.

The description of Marseul applies about equally well to the species above described, and to a form of which I have seen two examples received by Dr. Fenyes from Santa Fe., New Mexico. Specimens of each were accordingly sent to Mr. Frederick Blanchard, who has kindly compared them with the *blondeli* elytra in the LeConte collection. Mr. Blanchard reports that the Santa Fe specimen is of a more brilliant green but otherwise so closely in accord with *blondeli* that he thinks there can be scarcely a doubt of their identity. The two species are quite similar in most respects, but on comparison *blondeli* differs plainly from *opulenta* in its distinctly coarser, less dense punctuation and consequently more shining surface, in the more strongly angulate lateral crest and deeper excavations of the pronotum. There is on each elytron of *blondeli* at about two-fifths from the apex and midway between the suture and side margin, a small transverse impunctate cariniform elevation or tumidity, no trace of which exists in *opulenta*. Some other small differences are observable but they are comparatively unimportant and perhaps not constant. The Santa Fe specimens are respectively 14 and 17 mm. in length; the LeConte elytra indicate a still larger specimen. It is quite probable that the Santa Fe species ranges south into Mexico, and to this extent tends to confirm the locality given by Water-

house and Kerremans for *blondeli*. On the other hand, it seems unlikely that a species living on coniferous trees at an altitude of 7,000 or 8,000 ft. in the Rocky Mts. is also a native of the lowlands adjoining the Gulf of Mexico. The New Orleans specimen may therefore have been imported in timber; it should, however, be remembered that *T. lecontei* is also reported from Louisiana.

T. nimbosa n. sp.

Very similar in form and size to *blondeli*, of a dull bronze, with sparse subsquamiform pubescence; the elytra numerous irregularly immaculate with opaque velvety black spots, three of which in a longitudinal line on each elytron are larger and occupy more pronounced impressions. Head and prothorax densely punctate and impressed as usual in the genus; the pronotal excavations fully as deep as in *blondeli*, the lateral crests even more strongly angulate than in that species. Elytra each with three or four feeble costæ more or less interrupted by the impressions, the surface alutaceous and moderately closely punctate, the punctures not crowded as in *blondeli* or more especially in *opulenta*. Beneath more conspicuously pubescent, sterna densely punctate and dull, the abdomen shining brilliant coppery bronze, the first segment sparsely finely punctate, the following ones minutely and remotely so.

Length, 15-17 mm.; width, $4\frac{1}{2}$ - $5\frac{1}{2}$ mm.

Hab.—This species ranges from Tulare Co., California, to British Columbia.

Three examples—all ♀s—are before me, two taken by Mr. Hopping at "Marble Bridge" (5,200) and "Round Meadow, Giant Forest," Tulare Co., California. The third specimen was taken by Dr. Fenyès at Glen Alpine (7,000 ft.) near Lake Tahoe, Cal. The elytra of the latter specimen are completely devoid of pubescence, as is the case in a specimen in the LeConte collection from British Columbia, which, however, Mr. Blanchard believes is identical with the Marble Bridge specimen, which I have taken as the type.

Mr. Hopping informs me that the specimens taken by him—three in all—were found flying in the Giant Forest, and he does not know their food tree. Dr. Fenyès's example was found on the trunk of a fallen coniferous tree which, from memory, he believes to have been a spruce, certainly not a pine. Mr. Fuchs writes me that he once had specimens of this species (which he speaks of as *lecontei*) from Tuolumne,

Plumas and Shasta Cos., Cal., but that these are now in the Ulke collection. The Shasta specimen he thinks was taken on yellow pine (*Pinus ponderosa*).

T. lecontei Gory.

I learn from Dr. Skinner that there is a single example of this species in the Horn collection, and from Mr. Blanchard that the LeConte collection contains a single ♂, the following description of which he has kindly sent me.

"Very much smaller and more parallel in form (than *nimbosa*), the prothorax not at all expanded at sides. Front of head similar to the last, the carina and impressions less strongly marked. Thorax somewhat quadrate, apex and base nearly equal in width, sides broadly feebly arcuate, slightly sinuate behind, the angles arcuate; margin slightly inferior towards the front; surface impressed similarly to the last, finely and densely punctate except the convexity between the posterior impressions, which is impunctate. Elytra somewhat flattened, substriate near the suture, an irregular blackish subtransverse impression at anterior fourth, from outside the middle to the suture, a smaller more rounded one just behind the middle, distant from the suture, and a still smaller oblique one behind the last at posterior third; surface finely rugose and closely punctate, deeply impressed behind the humeri next to the margin; dull bronze varied with coppery. Prosternum feebly impressed, flat, abruptly tumid in front as in the other species; coarsely, densely, more or less asperately punctate, as is also the meso- and metasternum; abdomen finely, sparsely punctured and pubescent. Punctures of elytra bearing depressed inconspicuous scale-like hairs; sides of prothorax more abundantly hairy, especially behind; similar hairs beneath anteriorly and at sides, finer more hair like on the abdomen. Last ventral truncate and narrowly smooth and depressed at apex. Front and tibiae slightly arcuate and asperate within, but less regularly and distinctly so than in *opulenta*. Length, 9 mm.; width, 3.2 mm.

Hab.—Georgia (LeConte Coll.); Louisiana (Horn Coll.).

The more obvious diagnostic characters of our four species are expressed in the following table:

Green; first ventral segment very densely punctate.

Upper surface very densely punctate, side margin (lateral crest) of prothorax moderately angulate. (California to Washington)	opulenta.
Upper surface less densely, more coarsely punctate; side margin of prothorax strongly angulate (New Mexico; Mexico? New Orleans??)	blondeli.

Bronzed ; first ventral segment rather sparsely finely punctate.

Lateral crest of pronotum well developed and strongly angulate, size larger, 15-17 mm. (California ; British Columbia). *nimbosa*.

Pronotal crest obsolete, sides not angulate ; size smaller, 9 mm. (Georgia ; Louisiana) *lecontei*.

POLYCESTA.

In the January number of the Canadian Entomologist, p. 22, Mr. Schaeffer questions the correctness of my observation (ENT. NEWS, 1905, p. 73) as to the form of the last ventral segment in males of *californica*, his suspicions being based solely on his study of other species of the genus. In every student's experience instances have occurred where it is much easier to believe a published statement the result of an observational error, than to believe that an insect departs in some particular from a type known to prevail in allied forms. Mr. Schaeffer's doubts are perhaps natural enough, but they are in this case ill-founded, and I am able to state after a renewed examination, that the facts are precisely as recorded by me in the article cited. In my own collection and that of Dr. Fenyes are 8 ♂s and 4 ♀s of *californica*. In none of the males is the apex of the last ventral produced in the form of a broad obtuse parallel sided lobe (as is the case in every one of the 5 ♂s of *elata* at hand), the apex of the segment being very slightly subtriangularly prominent, the sides scarcely at all sinuate, the tip narrowly rounded or subangulate. I should have mentioned in my original notes a very obvious sexual character pointed out to me by Mr. Blanchard, which *elata* and *californica* possess in common. In these two species the first ventral segment is broadly swollen or tumid at middle throughout its length, the punctuation of this convexity being much finer and sparser than the same segment in the female. In *velasco* and *arizonica* Schaeff. this segment is not sexually modified. The Yuma male previously referred to by me under *velaso*, is without much doubt Schaeffer's recently described *arizonica*. These two forms are certainly very closely allied ; so closely that I somewhat doubt their being more than varietal forms of the same species.

MASTOGENIUS.***Mastogenius impressipennis* n. sp.**

Larger than *subcyaneus*, black, slightly bronzed, nearly glabrous, moderately shining. Head with violaceous tint, rather strongly convex, closely coarsely punctate, with a rather deep circular median fovea. Antennæ just passing the hind angles of the prothorax, slender, serrate from the fourth joint, second joint globose; third small, much longer than wide, subequal in length to the second and scarcely more than half as long as the fourth; intermediate joints fully twice as long as wide. Prothorax two thirds wider than long, widest at apical third, sides feebly arcuate and a little convergent behind, more strongly rounded in front, hind angles very slightly obtuse; surface evenly convex, a small foveiform impression near the middle of the side margin; punctuation rather coarse and very dense, with slight tendency to transverse strigosity; a very fine and faint median impressed line which reaches neither base nor apex. Elytra as wide as the basal width of the prothorax, sides parallel for three-fourths their length, surface a little more coarsely but less densely punctate than the prothorax, rather deeply and narrowly impressed along the basal margin, and each with three discal impressions, the anterior one subsutural. Beneath strongly closely punctate, less closely toward the ventral apex. Posterior margin of hind coxal plates broadly sinuate. Length, $3\frac{1}{2}$ mm.

El Taste, Lower California (Beyer).

Mr. Schaeffer has recently described two species of this genus, viz.: *reticulaticollis* from Brownsville, Tex., and *robustus* from Arizona. From the former of these *impressipennis* may at once be distinguished by the prothoracic and elytral sculpture, and from the latter by the impressed front, less transverse prothorax, and antennal structure. *Subcyaneus* differs much by its smaller size, sparser punctuation, differently formed prothorax, antennal structure, etc. Three other species of the genus are known, viz.: *Solieri* Thom., from Brazil, and *sulcicollis* Philippi and *parallelus* Sol. from Chile. The last mentioned differs from all of our species by the parallel-sided thorax, which is as long as wide; *sulcicollis* is separable by the sulcate thorax, as its name indicates; of *solieri* I have seen no description.

AGRILUS.***Agrilus lucanus* n. sp.**

Rather strongly cuneiform, color dark coppery bronze, elytra with short fulvous appressed hairs, forming an obscure basal spot, a diffuse median band, a narrower better defined fascia near the apical fourth, and

a small subapical spot connected with the latter along the suture. Antennæ slender, not quite reaching the hind angles of the prothorax, joints 1-7 longer than wide, 8-10 as wide as long, the serration beginning with the fourth joint. Head rather deeply unevenly impressed, coarsely closely punctate, the punctures tending to form short strigæ at some points. Prothorax transverse, sides straight and parallel posteriorly, feebly arcuately narrowed in front, not sinuate before the hind angles, which are strongly carinate; median line deeply broadly impressed, the concavity constricted near the middle and narrowed in front; surface transversely strigose at middle, obliquely at sides; side margin sinuous when viewed laterally. Scutellum carinate. Elytra not sinuate at sides, just visibly narrowed to behind the middle, thence more strongly so to apex, the tips obliquely sinuato-truncate interiorly, margin acutely serrate; disk flattened along the suture, the depression limited externally by a well-defined costa. Beneath with sparse yellowish pubescence which is not condensed at sides. Prosternal lobe rather strongly emarginate.

Described from a single specimen given me by Mr. Beyer, by whom it was taken at El Taste, Lower California. The type is a ♂, having the prosternum densely hairy, but without ventral characters. The front and middle tibiæ are mucronate at tip as usual; the hind tibiæ may also be armed but the tips are not visible as mounted. The front and middle claws are cleft at tip, the posterior with a broader more basal tooth.

Lucanus would best stand near *cavatus* as tabulated by Horn. In general facies, and especially in the form of the elytral apices it departs from the prevailing northern type and approaches that of the Mexican species. Dr. Horn is decidedly in error in saying* that the tibiæ are unarmed in the females of all our species of *Agrilus*. In many species the tibiæ in this sex are armed, the spur or mucro differing from that in the male only in being shorter and less conspicuous; it is, however, plain enough in the larger species, especially on the middle and (when present) hind tibiæ. I have not attempted to verify the presence of the terminal spur throughout the genus, but the following species among others well illustrate the point in question. *Couesii*, *cavatus*, *vittatocollis*, *bilineatus*, *angelicus*, *arcuatus*, *acutipennis*, *walshinghami*, *politus*, *niveiventris*.

*Trans. Am. Ent. Soc. XVIII, p. 281.

Notes on the True Neuroptera.

By J. F. McCLENDON.

(Plate VIII)

3. *A Catalogue of Texas Neuroptera.*

Very few Neuroptera have been recorded from Texas, and I am writing the following list in the hope that it will encourage others to make a more thorough study of this interesting group in that region. Through the kindness of Dr. Samuel Henshaw I was allowed to examine the specimens in the Museum of Comparative Zoology, and Dr. L. O. Howard and Mr. R. P. Currie gave me every facility in looking over those in the National Museum. Mr. Nathan Banks, Asst. Entomologist, Dept. of Agriculture, let me study his collection, which contains more Texas material than that of any museum I have visited. Most Texas material is scanty and merely labeled "Texas," and in some cases the genus only could be identified. Where the collector's name was not known I have inserted the name of the owner or donor of the specimens. In many cases I refer to a monograph rather than the original description of a species, and have omitted the author's name where it is included in the name of the species.

SIALIDÆ.

SIALIS Latr. (*Sialis* sp.? Austin, McClendon).

CORYDALIS Latr.

cornuta Linn., Hagen, '61,* Columbus, E. A. Schwarz; Austin, McClendon.



Fig. 1.—*Corydalid texana*, dorsal view of head and neck.

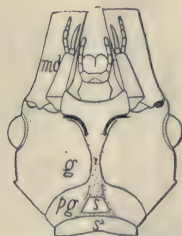


Fig. 2.—*Corydalid texana*, ventral view of head and neck.



Fig. 3.—*Corydalid texana*, labium and hypopharynx of larva.

* Synopsis of Neuroptera of North America, by Hermann Hagen, Smithsonian Institute.

cognata Hag., '61,* Pecös River, Hagen.

crassicornis McLach., '67, Jour. Linn. Soc. Zool., v. 9, p. 233, San Antonio, A. Agassiz.

immabilis McLach., '67, Jour. Linn. Soc. Zool., v. 9, p. 235, Waco, Bel-frage.

texana Banks, Jour. N. Y. Ent. Soc., v. 11, p. 239, Laredo, McClendon.

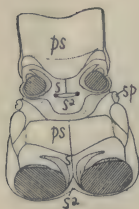


Fig. 4.—*Corydalis texana*, ventral view of thorax.

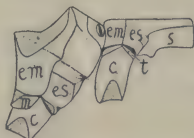


Fig. 5.—*Corydalis texana*, lateral view of thorax.

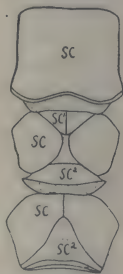


Fig. 30.—*Corydalis texana*, tergites of the thorax.

RAPHIDIDÆ.

RAPHIDIA Linn.

oculata Banks, '05, Trans. Am. Ent. Soc., v. 32, p. 4, Austin, McClendon.

MANTISPIDÆ.

MANTISPA Ill.

brunnea Say, Hagen, '61, Dallas, Riley; Victoria, Hinds, Morrill; San Antonio, Marlatt.

interrupta Say, Hagen, '61, Victoria, Caudell; Brownsville, E. A. Schwarz, H. Barber; San Antonio, Banks; Austin, McClendon.

CONIOPTERYGIDÆ.

CONIOPTERYX Halid. (*Coniopteryx* n sp., Brownsville, Barber).

CHRYSOPIDÆ.

LEUCOCHRYSA McLach.

antennata Banks, '05, Trans. Am. Ent. Soc., v. 32, p. 5, Brownsville, H. Barber.

americana Banks, '97, Proc. Ent. Soc. Wash., v. 4, p. 175, Austin, McClendon.

CHRYSOPA Leach.

oculata Say, Hagen, '61, Austin.

rufilabris Burm., Hagen, '61, Columbus, Schwarz; Victoria, Schwarz; Austin, McClendon.

quadripunctata Burm., Hagen, '61, Austin, McClendon.

sulphurea Fitch, Hagen, '61, Austin, McClendon.

plorabunda Fitch, Hagen, '61, Greenville, H. Barber; Austin, McClendon.

externa Hagen, '61, Greenville, H. Barber; Austin, McClendon.

punctinervis McLach., '69, Ent. Month Mag., '69, p. 24, Texas, McLach.

bimaculata McClendon, '01, Psyche, v. 9, p. 215; Brownsville, H. Barber; Austin, Banks; San Antonio, Banks; Laredo, McClendon.

HEMEROBIDÆ.

HEMEROBIUS Linn.

castanea Fitch, Hagen, '61, Texas, Belfrage.

perparvus McLach., '69, Ent. Month. Mag., '69, p. 21, Texas, McLachlan.

MICROMUS Rambur.

angustus Hagen, '86, Proc. Bost. Soc. Nat. Hist., '86, p. 287, Texas, Belfrage.

insipidus Hagen, '61, Columbus, Schwarz.

posticus Walk., B. M. Cat., Neur., p. 283, Victoria, Schwarz; Austin, McClendon.

CLIMACIA McLachlan.

areolis Hagen, '61, Columbus, Schwarz; Texas, Belfrage.

LOMAYIA Banks.

texana Banks, '97, Trans. Am. Ent. Soc., v. 4, p. 24, Brownsville, H. Banks; Central Texas, Banks.

MYRMELEONIDÆ.

(MYRMELEONINÆ.)

ACANTHACLISIS Rambur.

texana Hagen, '87-8, Canad. Ent., p. 197, Texas, Hagen.

DENDROLEON Hagen.

obsoletus Say, Hagen, '61, Blanco Co., Am. Ent. Soc.

PSAMMOLEON Banks.

ingeniosus Walk., Hagen, '61, Columbus, Riley; Brownsville and Alice, Barber; Blanco Co., Am. Ent. Soc.; Austin, McClendon.

BRACHYNEMURUS Hagen.

carrizonus Hag., '87-8, Canad. Ent., p. 93, Blanco Co., Am. Ent. Soc.; Brownsville, H. Barber; San Diego, Schwarz; College Station, Banks; Carrizo Springs, Hagen; Anstin, McClendon.

abdominalis Say, Hagen, '61, Brazos Co., Banks; Victoria, W. E. Hinds; Alice, H. Barber; Blanco Co., Am. Ent. Soc.; Dallas, Boll; Carrizo Springs, Hagen; Austin, McClendon.

longicaudus Burm., Hagen, '61, Texas, Hagen.

peregrinus Hag., '61, Matamoros, Hagen.

sackeni Hag., '87-8, Round Mountain, Am. Ent. Soc.; Dallas, Boll.

irregularis Currie, '06, Proc. Ent. Soc., Wash.; Columbus, Schwarz.

hubbardi Currie, '98, Canad. Ent., v. 30, p. 93. = *cockerelli* Banks; Carrizo springs, Dr. A. Wadgymar; Columbus, Am. Ent. Soc.

texanus Banks, '03, Jour. N. Y. Ent. Soc., '03, p. 240, Amarillo, Cockerell; Laredo, McClendon.

dorsalis Banks, '63, Jour. N. Y. Ent. Soc., '03, p. 240, Laredo.

curriei McClendon, '06, ENT. NEWS, v. 17, p. 93, Brownsville, Esperanza, Los Barregos, Barber.

MYRMELEON Linn.

immaculatus DeGeer, Hagen, '61, Texas, Hagen.

rusticus Hagen, '61, Brownsville, H. Barber; Victoria, Caudell, J. Mitchell, Schwarz; Columbus, San Diego, Schwarz; Pecos River, Hagen; Matamoros, Hagen; Austin and Laredo, McClendon.

texanus Banks, '00, ENT. NEWS, v. 11, p. 596, Columbus, Schwarz; Galveston, McClendon.

NEUROPTYNX n. gen. (= *Ptynx* Lefeb., preoccupied).

juvenilis McLach., '71, Jour. Linn. Soc. Zool., Dallas Boll.; Austin McClendon.

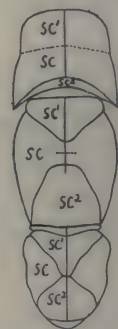


Fig. 31.—*Myrmeleon rusticus*, tergites of the thorax.

ULULODES Currie (*Ulula* Ramb.)

hyalina Latr. Hagen, '61, Dallas, H. Barber, Boll.; Austin, A. W. Morrill, McClendon; Bosque Co., Belfrage; Columbus, Schwarz; Waco, Galveston and Laredo, McClendon; Brownsville, H. Barber.

PANORPIDÆ.

BITTACUS Latr.

occidentis Walk., Hagen, '61, Texas, Banks.

PANORPA Linn.

nuptialis Gerst., '63, Stet. Ent. Zeit. '63, p. 24, Jonesville, Mally; College Station, Banks; Victoria, Calvert, A. W. Morrill; Dallas, Boll; Austin, McClendon, Norman.

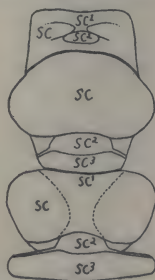
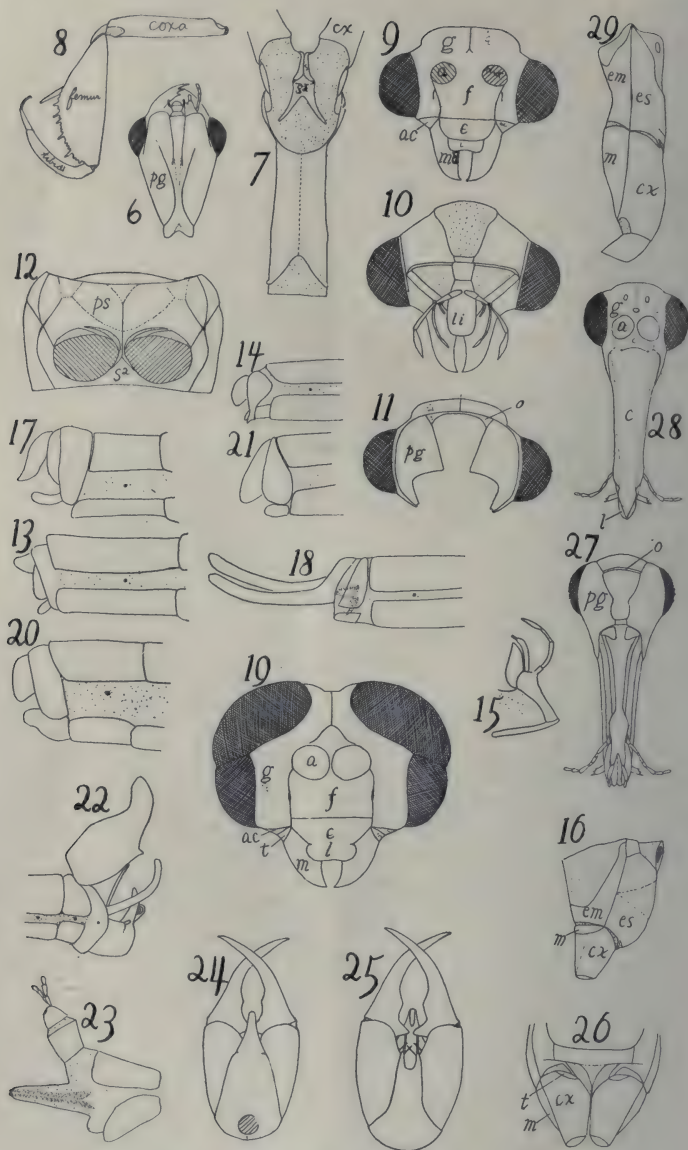


Fig. 32.—*Panorpa nuptialis*, tergites of the thorax.



THE TRUE NEUROPTERA McCLENDON.

EXPLANATION OF FIGURES.

The accompanying figures are intended to illustrate some points in the external anatomy. Where appendages are cut off, the cut surface is usually shaded with parallel lines. Membranous parts are shaded lightly with dots.

ABBREVIATIONS.

<i>a.</i> Antenna.	<i>g.</i> Gena.	<i>ps.</i> Presternum.
<i>ac.</i> Antecoxal piece.	<i>gu.</i> Gula.	<i>s.</i> Sternum.
<i>c.</i> Clypeus.	<i>l.</i> Labrum.	<i>s</i> ² Sternellum.
<i>c</i> ¹ . First Clypeus.	<i>li.</i> Labium.	<i>sc</i> ¹ . Prescutum.
<i>c</i> ² . Second Clypeus.	<i>m.</i> Meron.	<i>sc.</i> Scutum.
<i>cx.</i> Coxa.	<i>md.</i> Mandible.	<i>sc</i> ² Scutellum.
<i>em.</i> Epimeron.	<i>mx.</i> Maxilla.	<i>sc</i> ³ . Postscutellum.
<i>es.</i> Episternum.	<i>o.</i> Occiput.	<i>sp.</i> Spiracle.
<i>f.</i> Front.	<i>pg.</i> Postgena.	<i>t.</i> Trochantine.

EXPLANATION OF PLATE VIII.

- Fig. 6. *Raphidia oblita*, ventral view of head.
 " 7. *Mantispa brunnea*, ventral view of prothorax.
 " 8. " " anterior leg.
 " 9. *Myrmeleon rusticus* dorsal view of head.
 " 10. " " ventral " " "
 " 11. " " posterior view of head.
 " 12. " " ventral " " mesothorax.
 " 13. " " caudal appendages of female.
 " 14. " " " " " male.
 " 15. " " maxilla.
 " 16. " " lateral view of mesothorax.
 " 17. *Brachynemurus carrizonus*, caudal appendages of female.
 " 18. " " " " " male.
 " 19. *Ululodes hyalina*, head.
 " 20. " " caudal appendages of female.
 " 21. " " " " " male.
 " 22. *Bittacus strigosus*, " " " "
 " 23. *Panorpa nuptialis* " " " female; the abdomen is pressed so as to extrude the ovipositor, which is semi-transparent.
 " 24. " " caudal appendages of male, dorsal view.
 " 25. " " " " " ventral view.
 " 26. " " ventral view of mesothorax.
 " 27. " " anterior view of head.
 " 28. " " posterior " " "
 " 29. " " lateral view of mesothorax.

On the Perlid Genus *Chloroperla*.

BY NATHAN BANKS.

The genus *Chloroperla* was first described by Newman in the third volume of the Entomological Magazine, page 500; the number for April, 1836. He separates the genus from *Perla* because the subcosta and costa are parallel, and on account of the few cross-veins in this region of the wing. He says that the genus includes several species, and mentions *Ch. viridis* Fabr., and *Ch. lutea* Latr., and describes a new form *Ch. apicalis*. In August, 1836, appeared part of Vol. VI, Mandibulata, of Stephens' well-known "Illustrations," containing, on page 137, the genus *Chloroperla* Newman MSS. This, however is not important as Newman's own publications of the name antedates Stephens by several months; so that the type of the genus must be found among the three names given by Newman. In 1839 (Mag. Nat. Hist., n. ser., Vol. III, p. 87) Newman again treats of the genus *Chloroperla*, dividing it into two sections, aberrant and normal species. Among the normal species are the three names of his first article; *viridis* Fabr., and *lutea* Latr., appearing as synonyms of *C. flava* Fourc., a possible synonym of *C. tripunctata* Scop. This synonymy is not accepted by European authors, and the three names of Newman's first paper on *Chloroperla* are reduced to *tripunctata* Scop. and *apicalis* Newm. Both of these species are placed in the genus *Isopteryx* by the European writers on Perlidæ. Therefore *Chloroperla* Newm., 1836, replaces *Isopteryx*, Pict. 1841. *Chloroperla* of authors has no synonyms; the species of *Leptomeres* Rambr., and *Dodecatoma* Dufour, are placed in *Isopteryx*. So the *Chloroperla* of Pictet and later authors is without a name.

In Bull. No. 47, N. Y. State Museum, 1901, page 417, Mr. Needham divides the family Perlidæ into two subfamilies—Perlinæ and Nemourinæ. He bases these groups on the condition of the median vein near base of wing; fused with the radius in the Nemourinæ, distinct and parallel to the radius in the Perlinæ. There are various exceptions to this rule in both groups, but especially among those forms previously placed in the genus *Chloroperla*. This character is not of suf-

ficient constancy to divide the family into two subfamilies, but I think it may well be used as of generic value to divide the *Chloroperla* of authors into two genera. I therefore do so, using the name *Isoperla* for those forms having the median vein extending basally parallel to the radius, and *Alloperla* for those forms having the median united to the radius at base. The *Perla bilineata* Say, will be the type of *Isoperla*, which includes also *transmarina* Newm., *montana* Bks., *5-punctata* Bks., *brunneipennis* Walsh, and *decolorata* Walk. The *Perla imbecilla* Say, will be the type of *Alloperla*, which includes also *coloradensis* Bks., *pacifica* Bks., *signata* Bks., *borealis* Bks., *brevis* Bks., *minuta* Bks., *marginata* Bks., and *pallidula* Bks. *Alloperla* differs chiefly from *Chloroperla* (*Isopteryx*) by having a folded anal space to the hind wings.

Notes on *Papilio ajax*.

By R. R. ROWLEY, Louisiana, Mo.

It is not the writer's intention in this paper to tire his readers with a lengthy description of the stages of larval growth, since these have been carefully worked out by others and the results published, but to record his observations on the habits of the larva and the imago, with the hope that young collectors at least may gather some inspiration from these notes.

Wherever papaw grows there *ajax* is usually abundant throughout much of the summer months and from late May to mid-September this fine swallow-tail may be seen flitting aimlessly though the bushes, rarely stopping for a moment.

Even when very abundant, it is not easy to take this "fly," and nine out of every ten are so injured as to be worthless for cabinet purposes. So fragile are the wing tails that they are often broken in the meshes of the net.

In June of 1900, a veritable *ajax* year, I took a great number of these butterflies by decoys. A few ragged specimens taken on the wing were killed and spread upon the ground and leaves of low bushes along a path through the papaw patch where they could be seen by the stream of flitting "flies" above.

Restless as their flight seemed to be, many came down to the decoys and were easily taken.

Trying this trick on another year when the butterflies were less abundant, the ruse was almost a failure. In June of last year I was able to collect numbers of the eggs and young larvæ and thus secure over a hundred chrysalids from which I obtained less than a score of butterflies, the greater number of pupæ holding over to the next year. These eggs and larvæ were collected at intervals of a few days each from mid-June to mid-August, and the first chrysalids obtained about July 10th.

Several even of this first lot of pupæ have not yet given butterflies nor will till spring.

No chrysalids gave imagoes inside of three weeks. In company with Mr. E. A. Dodge on June 10th last, I observed an *ajax* ovipositing, mentally marked the leaves and, while one of us collected the eggs, the other followed the butterfly and thus we were able to secure a dozen or more ova of the same female.

We were surprised to find that she visited only low young plants, and even then oviposited only on the tender end leaves on the upper side (very rarely on the underside), sometimes, however, on the leaf stalk, once on a blade of grass near the papaw plant.

We had learned well a lesson, and after losing sight of our tutor, waded into the teasel patch in search of young papaw sprouts. We were abundantly rewarded with eggs and an occasional very young larva.

The smaller and tenderer the sprouts the greater the reward. The very small black caterpillars strongly reminding one of the larvæ of tree hoppers, were discovered on the underside of the small tender end leaves, their presence indicated by the small perforations seen on the upper side of the leaves. The larger larvæ were always found on the upper side of the leaf, that is after the first or second month, to maturity.

Once seen the eggs are often seen by keen eyes, even without stooping, but the leaves must be turned to find the freshly hatched larvæ.

In July we found eggs and larvæ on somewhat larger bushes, say two to four feet high, and on leaves below the tender end ones. Later in the year when fresh leaves are scarce all the foliage of the bushes was searched with success, but the trees (ten to twelve feet high) rarely yielded anything.

The eggs are little larger than mustard seeds, spherical, pale green or sometimes streaked or blotched with red, a feature often noticed on the eggs of such sphinges as *Smerinthus geminatus*, *S. myops*, *S. excæcatus*, and *S. modestus*. The black eggs we saw were, doubtless, parasitized.

In the searches for eggs and larvæ of *ajax*, eggs and larvæ of the "hawk," *Dolba hylæus* were often found, these latter eggs differing from the former in size, mainly being deposited on the underside of the leaf (rarely on the upper side).

Of course there is no mistaking the larva of *Dolba*, as it is pale green, slender, with caudal horn and sphingial bands. In all stages of the larva of *ajax* the thoracic region is swollen. The odor from the retractile thoracic tubes of the larva of *ajax* is stronger than and entirely different from that of other *Papilio* larvæ with which the writer is acquainted.

Of the chrysalids we obtained, about one-twelfth only were green, the rest being light reddish or yellowish-brown.

Like other *Papilios*, *ajax* is often seen in great bunches at damp, sandy or muddy places, but more rarely at flowers. The seasonal variation in this insect is well-known to collectors as also the differences in the depth of the coloration.

Stemmed Cocoons of *Telea polyphemus*.

BY DR. R. E. KUNZÉ, Phoenix, Arizona.

During the season of 1889 and including 1892, I collected immense numbers of Saturnian cocoons, within a radius of two to ten miles from New York City, which were exchanged at home or sent abroad. The localities included the banks of the Harlem River, Palisades, the Hudson, swamps of the Hackensack and the Passaic Rivers, low lands of the tongue of land between New York and Newark Bay, Staten Island, Flatbush, Brooklyn and Long Island City.

As a rule I found most of the stemmed *polyphemus* cocoons on the lowermost limbs of shade trees, such as the cut-leaved maple lining the streets and avenues of cities. This habit of fastening such cocoons on trees of public highways, must be accounted for in my mind as a protection against birds, as well as being stepped upon or crushed by pedestrians and vehicles.

On the other hand the same cocoons spun up in the leaf of white birch, nine times out of ten, would be defoliated and drop to the ground, where, if not destroyed by mice, would develop into imagines of this race unless parasitized.

I very seldom found a stemmed cocoon on white birch, and collected hundreds by turning over leaves in the winter under low-growing bushes, and usually on the banks of streams or the roadside of suburban parks.

Quite the contrary with stemmed cocoons found on low trees of bush-like growth of swamp or pin oak. I will recall a locality in the heart of a suburb of Jersey City, known then as Bayonne, on a narrow stripe of land bordering on New York Bay on the east, and Newark Bay west of it. Only two blocks from the New Jersey Central R. R., with handsome residences all around, were two squares, where the topography admitted of no residences. The year round this ideal winter collecting ground was under water from 12 to 18 inches deep, and sheltered birds, butterflies and moths. There must have been warm springs in these two city blocks, because only on the coldest days, with the mercury near the zero mark, could I venture to collect in this marshy place. Thus being less than a quarter mile from either bay, the property could not be drained.

In this swamp I collected one winter, mostly in January, some two hundred and fifty cocoons of *polyphemus* alone, hundreds of *promethea* and a few of *cecropia* cocoons. During the same winter I sent to Prof. Levi P. Mengel, of Reading, Pa., 350 cocoons of *polyphemus*, and over 3000 *cecropia* cocoons, all collected with the exception of *polyphemus* on Jersey City Heights and environs. To refer back to *polyphemus* cocoons I collected from swamp oak, they were dangling from defoliated branchlets like nuts from a Christmas tree.

It seems to me that the larva of *polyphemus* took this manner of spinning up on the branchlets of this oak, to prevent its falling in the water, where in due course of time it would have frozen to death. About one mile from Bayonne, at a suburb known as Greenville, I found on higher ground, hundreds of white birch bushes, with almost every cocoon of *polyphemus* spun in leaf and certain to drop below during autumn gales.

I wish to add my testimony regarding the habit of *T. polyphemus*, for the safety of this race, which I was put in mind of by a note by Miss Caroline Soule, in the December ENT. NEWS, Vol. XVI.

EDITORIAL NOTE.—We do not believe this caterpillar sufficiently intelligent to make stemmed cocoons over highways. The absence of the ordinary cocoons in such places is accounted for by the fact that they would rapidly be swept away by the ordinary traffic of the street or highway after they fell to the ground.

A MALPIGHIAN TUBE WITHIN THE HEART.—A few days before reading Dr. Riley's article with this title in the April News, page 113, I had given out, to my class in Invertebrate Zoology, some transverse sections of a grasshopper. On looking at one of the students' slides I noticed two sections of a Malpighian tube within the heart, but thought their presence there to be due to displacement in clearing the sections and dissolving the paraffin. Dr. Riley's article recalled this appearance and when the class met to study the sections, I at once saw that we had another of those apparently rare cases which Dr. Riley has described. Fortunately, I still had enough sections of this grasshopper on hand to give the following account of the course of this Malpighian tube. It entered the ventral surface of the heart by a cardio-coelomic aperture, at a level slightly in front of the hind end of the stomach, passed forward, within the heart, to a level slightly anterior to that of the hind end of the gastric coeca, bent upon itself and passed backward, still within the heart, to at least as far as the level of the anterior part of the rectum. A gap in the available sections of this region exists so that I am unable to state whether the tube terminated within the heart, or whether it passed out into the pericardial chamber as in Kowalevsky's case reported by Dr. Riley. This grasshopper was also a *Melanoplus*, probably *M. femur-rubrum*, and a female. I do not recall having seen any other instance of a Malpighian tube within the heart, and I would endorse Dr. Riley's view that such occurrences are accidental.—PHILIP P. CALVERT, University of Pennsylvania, Philadelphia.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., MAY, 1906.

Several times we have published comments on articles noticed in medical journals and called attention to the necessity of medical colleges giving a course on the principles of entomology, in view of the fact that so many diseases are carried by insects. The quotation below is from the April, 1906, "Medical Brief," page 282, and carries us back before the time of Dr. Francesco Redi, who lived about 1618. It has been questioned whether such a statement as that in the "Brief" is meant seriously, but from articles we have seen in other medical journals and from conversation with some medical men there can be no question about it.

"Take the human seed germs (spermatozoa), put them upon a plate, first spreading some alkaline nourishment upon the plate; for instance a little soap, place the plate in a room of proper temperature, and in sixteen to twenty-four hours, swarms of *ants* will be running about. In other words, these living human germs placed under this different condition other than the mother soil, develop into ants. These little fellows can be watched and be seen to gradually develop and start off on the run. This would evidently appear that living germs, when placed by accident, or otherwise, under very different conditions, produce very different forms of life. But what relationship do we owe to the ant? Perhaps this is why the claim is made that the ant has more characteristics of the human being than any other animal."

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

MRS. A. T. SLOSSON has gone to Lake Toxaway, North Carolina, to spend a month.

UP-TO-DATE METHODS IN ENTOMOLOGICAL PUBLICATIONS.—Separates from the Journal of the New York Entomological Society for December, 1906 (which will be published seven months hence), have been distributed by the Government. These separates bear date of March 14, 1906, and were distributed April 17, 1906. This paper describes "The Larvæ of Culicidæ classified as Independent Organisms. By Harrison G. Dyar and Frederick Knab." This delicious admixture of the past and future dates is highly interesting. Species herein described conflict with those made known in the Canadian Entomologist and ENTOMOLOGICAL NEWS for April, 1906.* Of course the names in the NEWS and Canadian Entomologist would have precedence. It is not our intention to review this paper but only to refer to the dates and the fact that species are described from larvæ alone. In looking over it we have come to the conclusion that the future synonymy, etc., will be somewhat like a Chinese puzzle, and reminds us of the question, How old is Ann? We expect a paper shortly describing species from the egg or pupa alone.—HENRY SKINNER.

Omaha, April 29, 1906.

EDITORS NEWS: Gentlemen—Enclosed please find a paper which I wish printed in the May NEWS. Please send me proof. Yours truly, JOHN DOE.

San Francisco, Dec. 31, 1905.

EDITORS NEWS: Gentlemen.—I enclose a paper for the NEWS, which I wish to appear in the next number. Yours truly, JOHN GREEN.

New York, April 30, 1906.

EDITORS NEWS: I have just moved; please change my address and send May NEWS to 1908 Broadway. Yours truly, JOHN SWIFT.

Manayunk, April 30, 11.59 P. M.

EDITORS NEWS: Gentlemen.—Enclosed please find paper for the May NEWS. I know you have received fifty papers ahead of mine, but I want mine in the next number. If the NEWS is printed, kindly have a new edition struck off and insert my paper in it. Yours truly, JOHN GAUL.

(The above are only samples.—EDITORS).

"I HOLD it is not decent for a scientific gent

To call another one an ass—or words to that intent.

Nor should the individual who happens to be meant

Reply by heaving rocks at him to any great extent."

—"TRUTHFUL JAMES."

**Culex sylvicola* Grossbeck and *lativittatus* Coq.

PROF. BERLESE'S APPARATUS FOR COLLECTING ARTHROPODS.—Prof. L. O. Howard's account of the Berlese apparatus for collecting small arthropods (ENT. NEWS, 1906, pp. 49-53), reminds me of a simpler method tried many years ago with great success by the late R. Lawson, of Scarborough, England. Instead of the metal funnel to be warmed by hot water, he used a similarly shaped suspended canvas bag, and drove the insects downward by placing rags saturated with ammonia above the material on the sieve. The result was the same, everything wanted falling into the tube of alcohol at the bottom.—G. C. CHAMPION, Horsell, Woking, England.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held Nov. 23, 1905, Mr. H. W. Wenzel, Vice-Director, presiding. Sixteen persons were present. The presentation of 3,167 specimens of Ichneumonoidea, including types, by Mr. G. C. Davis, was announced by the conservator. Dr. Calvert exhibited a map showing localities in Mexico from whence he had recently received Odonata. Every collection showed interesting material in either species new to Mexico and Central America or showing new distribution. *Nephepeltia phryne*, which has a curious spine on the metasternum, was exhibited from Guatemala. Dr. Skinner described dragon-fly collecting in the Huachuca Mts., So. Arizona. Mr. Rehn spoke of the Orthoptera he had recently received from Costa Rica and of a paper on the material. Two thousand specimens, 300 species, were under observation, of which 56 proved new. Mention was made of the various collections examined for the report. Mr. Daecke said he had found a nest of *Vespa carolina* at Riverton, New Jersey. He had taken both sexes and the workers and found *V. carolina* and *V. cuneata* to be the same species; the female queens were *carolina* and the males and workers *cuneata*. The nest was about twelve inches in diameter. The entrance was described as being papered and nicely built, the tunnel being nine inches long. Dr. Calvert spoke of the importance of a description of such a nest, as the subject was not well known. Mr. Wenzel said his son Harry had caught a lively male of *Vespa germanica* on January first. Mr. E. T. Cresson, Jr., was elected a member, and Mr. Oscar Mayer an associate.

HENRY SKINNER, *Recorder*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held Dec. 28, 1905. Mr. Philip Laurent, Director, presiding. Twelve persons were present. Mr. Franklin, of Amherst, Mass., visitor. Mr. Matthews, exhibited several short-tailed specimens of *Papilio philenor* reared from chrysalids received from San Francisco, California. Mr. Franklin made some remarks on the nests of *Bombus*, having examined thirty. He found carbon bisulphide the best medium to quiet bees. In his opinion *Bombus pennsylvanicus* is the commonest species in the vicinity of Amherst, Mass., judging by the number of nests. Some remarks were also made on the possible correlation of sexes of some of the species. Mr. E. T. Cresson described methods used by himself in previous years in collecting specimens of this genus. Mr. Franklin remarked that the only specimens of the genus seen in early spring were queens. The following were elected to serve as officers for the year 1906: Director, Philip Laurent; Vice-Director, H. W. Wenzel; Treasurer, E. T. Cresson; Recorder, Henry Skinner; Secretary, Frank Haimbach; Conservator, Henry Skinner; Publ. Committee, C. W. Johnson, J. H. Ridings. J. A. G. REHN, *Recorder pro tem.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held Jan. 25, 1906. Mr. H. W. Wenzel, Vice-Director, presiding. Fourteen persons were present. Mr. Bradley exhibited plates of Evaniidæ showing the various anatomical characters including neurulation. Characters separating genera and species were shown and explained. Mr. Bradley also spoke of his last summer's trip to the Selkirk Mountains in British Columbia. Many insects of interest were taken although little of the material has as yet been studied. Some pictures of the scenery of the locality were shown. He said at 6,000 ft. altitude a Leptid was found which bit. Dr. Skinner exhibited some photos of dragon-fly wings and said they had been photographed against the light with a ground-glass background. This method showed the neurulation in a satisfactory manner. It is a good method where the wings are to be enlarged and not removed from the body. Mr. Bradley said at Cornell University the wings were removed

and photographed, then the wings were kept separately and mounted on glass. Mr. Rehn exhibited a box of Orthoptera from Labuan, British North Borneo, a small island, to show diversity. He also made some remarks on the genus *Trimero-tropis*. A large amount of material from the west had been studied. The color characters used by McNeill in his revision were not considered of very great importance for specific determination. The intergradational color patterns were illustrated by black-board sketches.

Dr. Calvert showed a series of tropical dragon-flies, *Erythrodiplax connata*, showing various color phases. Specimens with a red frons and others with a blue frons, described as different species, were shown by intergradations to be the same thing. Mr. Howard A. Snyder said, in October he had spent a few weeks in the Bermuda Islands but did not find any insects not found in the United States, probably on account of the nearness of the islands. The character of the climate and flora was mentioned and the insects taken exhibited. Dr. Calvert mentioned Verrill's work on the islands.

HENRY SKINNER, *Recorder*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held March 22, 1906, Mr. Philip Laurent, Director, presiding. Ten persons were present, including Mr. W. M. Beutenmuller, of New York, visitor. The latter presented two hundred specimens of Coleoptera taken in the Black Mts., North Carolina. Mr. Beutenmuller spoke of the necessity of protecting valuable collections from fire, and gave a diagram of the plan for protecting the insect department of the American Museum of Natural History in New York. Mr. Rehn said he had recently determined some Tonkin Orthoptera for Mr. Chas. Schaeffer of the Brooklyn Institute. A fine walking-stick and four katydids were new.

HENRY SKINNER, *Recorder*.

A meeting of the American Entomological Society was held December 28, 1905, Dr. P. P. Calvert, President, in the chair. Twelve persons were present. The report of the Treasurer

was read, in which he stated there was a balance on hand of \$1,262.97. Mr. E. T. Cresson, Jr., was elected a member. The following were elected officers to serve for the coming year: President, Philip P. Calvert; Vice-President, H. W. Wenzel; Treasurer, E. T. Cresson; Recording Secretary, Henry Skinner; Corres. Secty., Frank Haimbach; Curator, Henry Skinner; Librarian, E. T. Cresson, Jr. Publication Committee: E. T. Cresson, C. F. Seiss, B. H. Smith. Executive Committee: P. Laurent, H. W. Wenzel, Frank Haimbach. Finance Committee: J. W. McAllister, C. S. Welles, D. M. Castle.

HENRY SKINNER, *Secretary*.

A meeting of the American Entomological Society was held Feb. 15, 1906, Mr. H. W. Wenzel, Vice-Director, presiding. Nine persons were present. The annual report of the Curator was read. Mr. Laurent said he had first used chip fruit baskets for shipping insects about fifteen years ago, and spoke of their value for this purpose. Since that time they had been used more or less by entomologists.

HENRY SKINNER, *Secretary*.

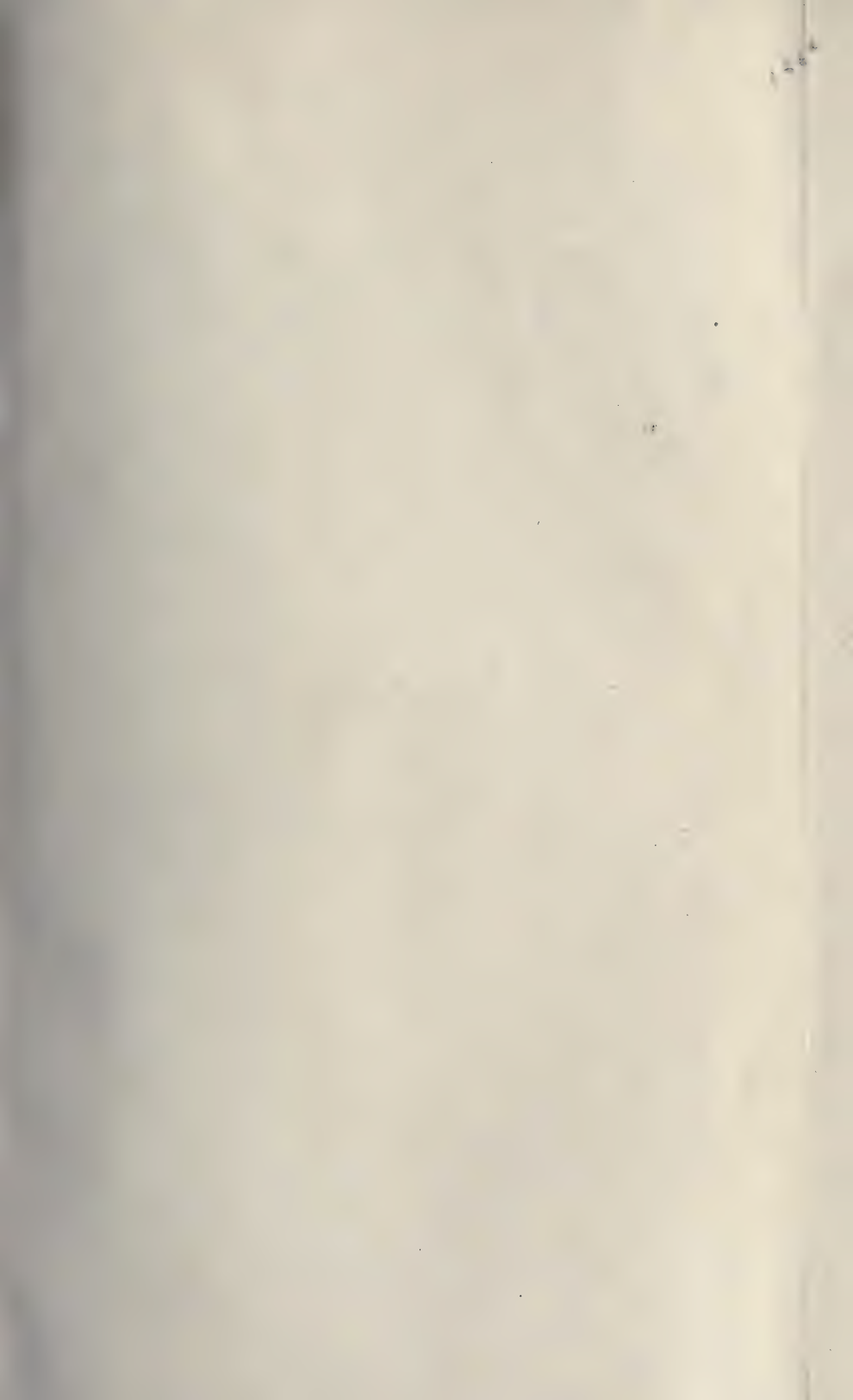
At the meeting of the Feldman Collecting Social, held February 26, 1906, at the residence of Mr. H. W. Wenzel, 1523 So. 13th St., Philadelphia. Eight persons were present. Mr. Carl Schaeffer, visitor. A letter from Dr. Dyar was read, in which he states that *Pamphila manataaqua* and *cernes* are congeneric. Mr. H. Wenzel read a very interesting note on *Omus* from a letter which he had received from Mr. Ralph Hopping, of Kaweah, Calif. The writer says "I take *O. intermedius* in one place only (Colony Road, Tulare Co., Calif.), 3,500 to 4,500 ft.; *O. sublaevis* in pine forest, 5,000 to 7,000 ft. The smooth form *O. laevis* occurs 8,000 to 10,000 ft. in my locality, but I have never had the luck to find it. Dr. Walther Horn's elevations for this form are incorrect. The collector unintentionally misinformed him. I went to a great deal of trouble to prove these elevations. The collector sent me a map marking the exact location, and from my intimate knowledge of the trails in the Sierras I was able to place the

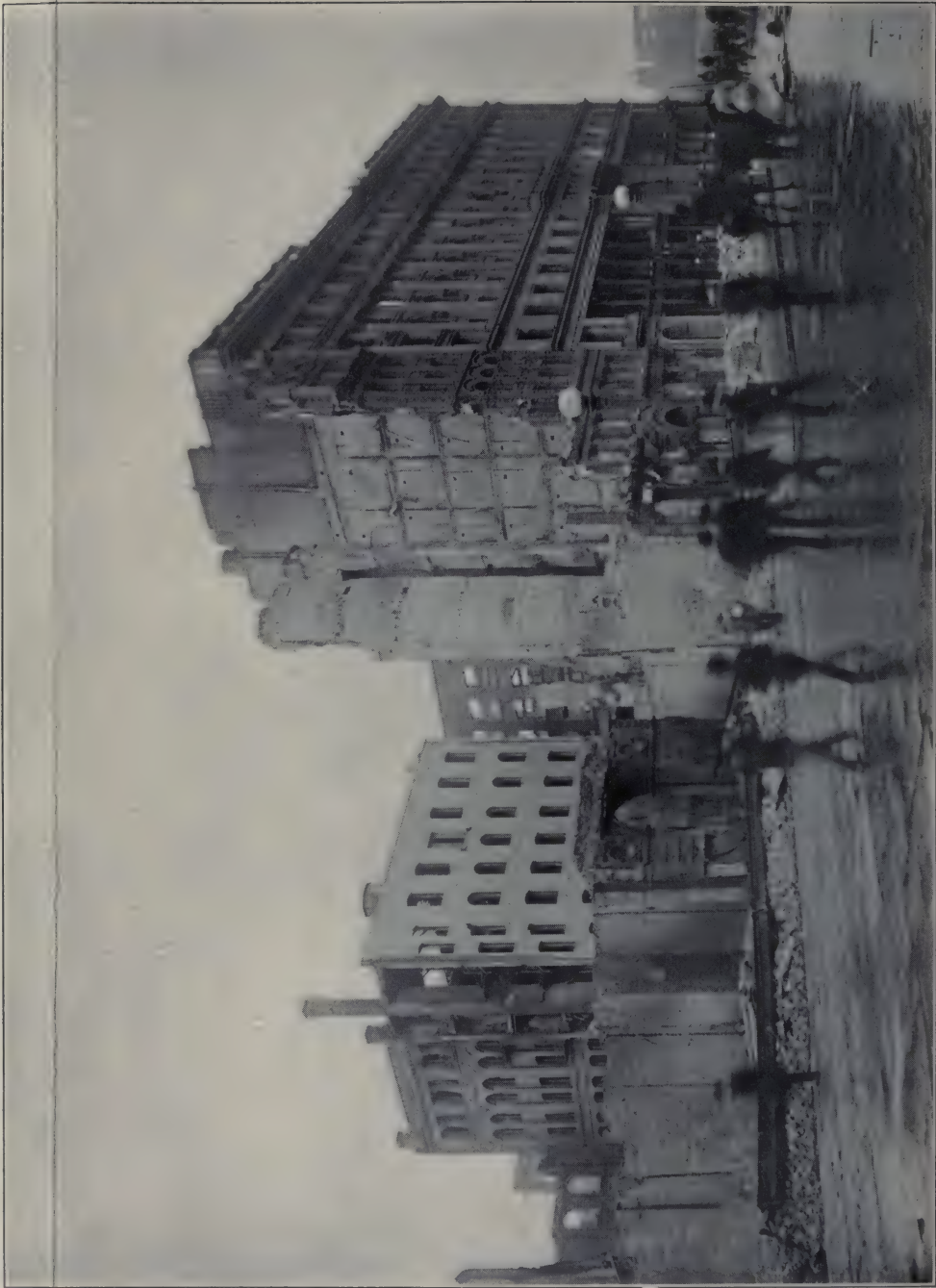
exact locations." Mr. Huntington spoke about photography as it was applied by the Canadian Government in surveying the Rocky Mountains of Canada. Mr. Schaeffer spoke of the difficulty of collecting *Cicindela santaclaræ* on the plains at Palmerlee, Ariz. Mr. Schaffer exhibited some species of the genus *Anomala*, among them being four entirely new and four being new to North America; one species being from Lower California, two from Texas and others from Arizona.

F. HAIMBACH, *Secretary*.

A meeting of the Feldman Collecting Social was held March 21, '06, at the residence of Mr. Henry W. Wenzel, 1523 S. 13th St., Philadelphia, Mr. Erich Daecke, President, in the chair. Members present: Daecke, Wenzel, Laurent, A. Hoyer, Seiss, Harbeck, Castle and Skinner. Mr. Wm. Beutenmuller, New York, visitor. The minutes of the last meeting were read and approved. Mr. Wenzel said he had received a number of postals from our fellow-member, Prof. J. B. Smith, who is abroad. Mr. Beutenmuller said he had collected a number of Staphylinidæ during trips to the mountains of North Carolina in the last five years. Nine species of *Oxyporus* were taken. *Femoralis* and *major* were common. The other species found were *stygius*, *vittatus*, *fasciatus*, *bicolor*, *lateralis*, *lepidus* 5-maculatus. They were all taken in the fall except *stygius*, which was found in May. Dr. Castle said he had found *O. major* plentiful at Angora, Pa., in the fall. On March 10th, Mr. Harbeck said he took five species of diptera, seventeen specimens, at Germantown, Phila., including *Fucellia fucorum*, which only appeared while the sun was shining. Mr. Wenzel exhibited a pair of *Strataegus splendens* from Tybee Island, Ga., taken by H. A. Wenzel. Mr. Daecke reported having been out collecting on March 11th, and took a dipterous larva feeding on spider eggs and some other hibernating imagos and larvæ. In a small spot protected from the cold, he took some insects on wild honeysuckle. In a box of farina he found an imago and many larvæ of *Ephestia kuehniella*.

Dr. Skinner invited the Social to meet at his home at the next meeting (April). HENRY SKINNER, *Recorder pro tem*.





RUINS OF THE ACADEMY OF SCIENCES. SAN FRANCISCO. CALIFORNIA

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

JUNE, 1906.

No. 6.

CONTENTS:

Wright—Ruins of the Academy of Sciences, San Francisco.....	187	Sanderson—Texas Notes—I.....	210
Taylor—On some new species of Geometrid moths from Arizona and California	188	Weber—Notes on mosquitoes.....	214
Caudell— <i>Autolyca doylei</i> , a new Phasmid from So. America.....	192	Skinner—A new <i>Cantharis</i>	217
Banks—A rock-boring mite.....	193	Tower—A new method of preparing wings and other parts of insects for study.....	218
Weeks—New species of butterflies....	195	Cockerell—A new Sawfly.....	220
Pergande—Description of two new genera and three new species of Aphididae.....	205	Editorial	221
		Notes and News.....	222
		Doings of Societies	226
		Obituary—Mr. Roland Hayward	230

Ruins of the Academy of Sciences, San Francisco, Cal.

BY W. G. WRIGHT.

(Plate IX)

This view was taken during a rainstorm after the fire of April 18, 1906, and is more of a *side view* than a front view. The street along which men are walking is Market Street.

The *main entrance to the Academy* is the arched opening under the left electric light.

The most of the *front of the building* is fallen down, but some three or four windows of the front part are shown in the photo.

The *Museum Building* is at the left, the walls mostly standing nearly intact, but it is licked clean by fire, inside, and probably is unfit for rebuilding.

The space in front of, or at the right of the Museum Building, and between it and Market Street, was occupied by fine stores on the ground floor, and by suites of offices in the upper stories; from the rental of these stores and offices the Academy received its chief income.

On some New Species of Geometrid Moths from Arizona and California.

By GEORGE W. TAYLOR, Wellington, B. C.

The forms, described in the present paper, are all of them apparently new to science. The first named is in the collection of the United States National Museum, and for the privilege of examining and describing it I have to thank Dr. Harrison G. Dyar. The other forms described are all in my own cabinet.

1. *Melemaca virgata* n. sp.

This is a very beautiful insect which I thought at first might be *M. magdalena* Hulst, but the arrangement of the lines on the fore-wings is not the same, and Dr. Dyar, who has kindly sent me a rough sketch of the type of *magdalena*, assures me that it is not that species. Front and thorax pale yellow, palpi a little darker. Ground color of wings orange yellow. Fore-wings with two bands or stripes, one (outer) running from the apex of the wing to the middle of the inner margin, and the other (subcostal) from the junction veins 7 and 8 to the base of the wing. The color of the first-named stripe is olive greenish, bordered with a narrow deep red line on the inner side and by a conspicuous white stripe on the outer side. Towards the apex of the wing the red line becomes much wider and the olive line narrower. The subcostal stripe is bordered below by a red line and above by a white band, which is followed by a red stripe, the costa itself being of the ground color of the wing. The submarginal space is *orange*, becoming red at the tornus; fringe pale yellow. The hind-wings are pale orange, the color deepening from base outwardly until a reddish line is formed running in a regular curve from the apical angle to the middle of the inner margin. This is followed by a paler shade, and again towards the margin the color deepens. Fringe paler as on the fore-wings. Beneath, the color is paler, the lines of the fore-wings are reproduced faintly and the extreme apex is bright red. The hind-wings are quite pale. No discal points visible either above or below.

Expanse 28 mm.

Type.—One ♂. Huachuca Mts., Arizona, July 16-23. In U. S. Nat. Museum.

2. *Hydriomena multipunctata* n. sp.

Palpi rather large and stout, black on outside, grey on inner side and at tip. Front dark grey. Thorax concolorous with fore-wings. Fore-wing with costa almost straight for three-fourths of its length, then sharply curved so as to make a right angle with the outer margin. Color of fore-wing light fawn. In the central area the ground color is overlaid with a smoky shade, forming a band across the wing but not limited by lines.

All veins dotted with alternate white and dark brown dots as in the submarginal area of fore-wing in *Zenophleps lignicolorata*. A dark brown discal dot and faint indications of two or three parallel lines in the central band. A marginal row of black dots, one dot on each side of each vein, fringe concolorous with wing. Hind wings smoky grey, darker outwardly. In the submarginal area the veins are dotted as in the fore-wings. A small brown discal dot and marginal black dots as on the fore-wings. Under surface of all wings darkened with smoke color, and on the outer third the veins are dotted as above. The marginal black dots are also reproduced. Expanse 37 mm.

Described from one ♂. Mountains near Claremont, California. Collected by Prof. C. F. Baker, who has generously placed the specimen in my collection.

This species has a slight resemblance at first sight to *Zenophleps lignicolorata*, but it may be at once distinguished by the thickened and flattened antenna of the male. In *Zenophleps* the antennæ of the males are pectinated.

There is not any other North American Geometer known to me to which *H. multipunctata* bears any near resemblance.

3. *Hydriomena magnificata* n. sp.

This is a species somewhat resembling *Hydriomena speciosata* Packard but very much larger. The type specimen has an expanse of 45 mm., while *speciosata* ranges from 35 to 40 mm.

The prevailing colors are black and green, but in the type (which has been relaxed) the green tints have faded, as such tints generally do, to a light clay color.

Palpi long, porrect, green, with spots of black, the extreme tip green. Front green. Thorax green with black spots at sides and a conspicuous black dorsal spot. Abdomen silky grey with black dorsal spots on the posterior segments, the base of the terminal tuft being also conspicuously black. The fore-wings green with black blotches, which appear to be parts of six broken transverse lines. The extreme base of the wing is also black. The first three lines are intradiscal and are separate and conspicuous on the costa, but are united with an irregularly-shaped blackish blotch, enclosing a green spot, on the inner margin. The fourth line is extradiscal and is marked by about five narrow black blotches on the veins. It does not reach the inner margin. The fifth line is in the submarginal space and consists of a square black blotch on the costa, a much larger one between veins 6 and 4 and a third extending irregularly from vein 3 to the outer angle of the wing. The sixth line forms an irregular margin to the wing. The fringe is pale outwardly, darker at base and

cut with distinct black pencils of scales at end of veins, a few white scales being on each side of the pencils of black ones. The hind-wings are clear grey with a few dark marginal cloudings; fringe pale, slightly marked with black at ends of veins. Beneath, the markings of the upper surface are rather distinctly reflected.

Described from one ♂. Cochise Co., Arizona, March 4th.

It is possible that this very handsome species may be in some collections as *speciosata* Packard, but the true *speciosata* is, as pointed out above, not nearly so large and has moreover an unspotted thorax and abdomen, and lacks the reflected markings on the under side of the primaries.

4. ***Macaria quadrifasciata* n. sp.**

Male antennæ dentate fasciculate, more like *Philobia* than *Macaria*. Palpi and front dark yellow ochre. Wings, thorax and abdomen pale yellowish fawn, rather thickly covered with specks of a darker tint. Fore-wing crossed by four lines. The basal curved out from costa then straight to inner margin. Intra- and extra-discal lines are parallel to each other and to the basal line. The distance between the basal and intra-discal is only half as great as that between the intra- and extra-discal lines. The submarginal line is quite straight, running from costa about 1 mm. from apex to the internal angle. Hind wings with three lines (basal obsolete), no discal spot, fringe concolorous with wings. Beneath, all the markings are reproduced lines rather diffuse; the extreme margin of wings marked by fine black points between the veins. Expanse 32 mm.

Described from one ♂. Cochise Co., Arizona, July 8, 1904. The type was badly broken in a trip to Washington and back, but the species seems so distinct that I venture to describe the fragments.

The type specimen has lost the hind tibia, I cannot therefore be quite sure that the species belongs to *Macaria*. I think, however, that I am right in so placing it.

5. ***Enemera simularia* n. sp.**

Expanse 38 mm.

This moth is smaller than Californian or British Columbian specimens of *E. juturnaria*, but about the same size as specimens of that species from Arizona.

It is very similar to *juturnaria* on the upper side, the main difference being in the single extradiscal line. In *juturnaria* this line leaves the costa at about two-thirds distance from

base. It curves regularly outward, being most distant from base at vein 4, thence it curves inward to the inner margin.

In *simularia* this line commences almost exactly in the middle of the costa proceeding towards the centre of the outer margin in an almost straight line to vein 5, then turning at an obtuse angle and running in a straight line to the inner margin.

On the under side the difference is greater. An extradiscal line divides each wing into two parts. The outer half of each wing is very dark—on the hind wings nearly black.

The course of the extradiscal line on the hind wings is peculiar. The ends of the line are not at the middle of the costa and the middle of the inner margin. From each end the line curves regularly towards outer margin, forming an acute angle on vein 5, recalling the median line on the underside of secondaries in *Cænocalpe annellata* or *Marmopteryx marmorata*.

Types 1 ♀ and 1 ♂ in poor condition. Pasadena, California. Mr. F. Grinnell, July 22 and 29, 1903.

6. *Eupithecia helena* n. sp.

Palpi long and bushy, white, with a few black scales, tip black. Front, head and thorax dull white, with slight ochre tint. Abdomen same color, but with rather more of the ochre tint on the anterior segments; the last two segments greyish. Dorsal tufts small, black. Fore wings dull white, overlaid with brownish scales. Basal area blackish. Basal line double. Intradiscal line double, distinct on costa, faint across the wing, regularly curved, parallel with basal line. The space between basal and intradiscal lines is occupied by a broad, rusty brown, regularly curved band. Extradiscal lines double, white, wavy, very conspicuous on the costa, divided by a fine brown line; the inner white line is marked on inner side on each vein by a black dot. The course of these extradiscal lines is straight from the costa to vein 7, then evenly rounded out to vein 2, then in 2 or 3 scallops to the inner margin. Discal spots large rusty brown. Beyond the extradiscal line there is a rusty brown band which is almost continuous from costa to the inner margin. This is bounded by a distinct, white, wavy, submarginal line. The marginal space is dark grey. Marginal line distinct, black, hardly interrupted at the veins. Fringe long, color of the wings, marked at base with faint brown spots. Hind wings, color of fore wings, crossed by 7 or 8 dusky grey indistinct lines. The outermost being the most prominent. A submarginal white line and a marginal black one as on fore wings. Discal spot lengthened, blackish. Beneath, white, with indications of all the lines as above. The rusty brown bands of the upper side show as dark grey bands below, and there is in addition a rather

conspicuous dark grey line marking the inner edge of the extradiscal lines. In the hind wings there are two extradiscal dark grey bands, the other lines being represented by faint indications only. Discal spots on all wings black, diffuse; marginal lines black, very distinct. Legs greyish white, the anterior pair banded with black, posterior pair wanting. Expanse 26 mm.

Type.—One specimen from Pinal Mountains, Arizona, July 9, 1900.

In coloring this species recalls *E. nevadata* Packard, but in the present species the large costal blotch over the discal spot which is so conspicuous in *nevadata* and its allies is wanting. The wings in *helena* are also much rounder, the outer margins being very full. In the shape of the wings and the arrangement of the markings, but not in color, this species rather nearly agrees with *E. togata* (Hübner) of Europe.

Autolyca doylei, a new Phasmid from So. America.

By A. N. CAUDELL, Washington, D. C.

Male.—Elongate, black, not shining, unarmed; the entire insect, including the legs and antennæ, covered with inconspicuous, fine, short black hairs. Head as broad as long, the posterior half of the top and sides yellowish; antennæ black, longer than the body. Pronotum about one-fourth longer than broad; mesonotum about one and one-half times as long as the pronotum and but slightly longer than the metanotum, including the intermediary segment, which is not quite as long as the metanotum proper. Abdomen apically much swollen and, in the only specimen seen, curved strongly upward; segments 1-6 quadrate or barely elongate, the three terminal segments transverse; the scoop-shaped ventral process of the seventh segment is broad and reaches to the tip of the abdomen; cerci stout, clavate and incurved, as long as the terminal segment of the abdomen and descending from beneath that segment at nearly right angles. Legs black, except the ventral surface of the tarsi, which is yellowish brown; anterior femora not noticeably curved at the base; all the tibiæ areolate below and slightly longer than their respective femora and not quite twice as long as their tarsi; all the femora, as well as the tibiæ, dully and inconspicuously carinate, the posterior femora reaching nearly to the apex of the sixth abdominal segment. Length:—pronotum, 4 mm.; mesonotum, 5.5 mm.; metanotum, including the intermediary segment, 5 mm.; anterior femora, 13 mm.; intermediate femora, 10.5 mm.; posterior femora, 15 mm.; width, head, 3.5 mm.; pronotum, 3.5 mm.; basal segment of the abdomen, 3 mm.; apical segment of the abdomen, 4.25 mm.

Type No. 9629, U. S. Nat. Mus.

One male, taken by C. B. Doyle, at an altitude of 2950 meters at Tierra Adentro, Central Cordillera, Dept. of Cauca, Colombia, South America, headwaters of the Palo River, in January, 1906.

This interesting insect, which is named after the collector, is easily distinguished from the other members of the genus by the elongate form and especially by the coloration of the head.

A Rock-boring Mite.

BY NATHAN BANKS.

In the fall of 1904, Prof. J. H. Comstock sent me some pieces of rocks taken from a limestone cliff that is moistened by the fall of water. The surface contained numerous small cavities or pits of varying sizes. Most of them had a narrowed orifice, and within each pit was found a mite, approximately of the size of the pit. Although, of course, a mite of such habits must be called "*petrophagus*," I have no idea that rock forms any part of its diet. The surface of the stone to a short depth is somewhat softened, doubtless by the action of the water, and it is probable that in the minute holes and passages of this softened area there is growing some tiny plant-organism that forms the food of this cave-digging mite. From all appearances the cavities are caused by the mite, and increase in size with the growth of the acarion. Possibly the mite has some secretion that aids in the destruction of the stone.

Remarkable as are the habits of this mite, its structure, save that it belongs to a rather peculiar genus, is not exceptional. This habit is the necessary consequence of the conditions of its existence, for if the mite should try to live free on the surface of the rock it would be washed away by storms. To escape, therefore, the ravages of the elements it takes to the cyclone cellar. Migration must be performed over the surface of the stone, but it is probable that the young issue at a season when the stone is not subject to heavy storms.

On microscopic examination the mite is seen to belong to the family Oribatidæ, or beetle-mites, and to the genus *Scutovertex* of Michael. We have, at least, one other species of this

genus in our country, the *S. marinus* Banks, that occurs on the surface of boulders between tide-marks along the Long Island shore. *S. marinus* is usually found in small depressions of the stone, but forms no cavities; and when the tide is out one can find a few wandering over the rock. Four species of *Scutovertex* are known in England, one was found in moss; one on lichen near the seashore, and two on algæ in fresh-water pools near the seashore. Michael has described a species as taken from marine algæ at Terra del Fuego.

The new species I describe as follows:

***Scutovertex petrophagus* n. sp.**

Rather uniform dark brown, a pale spot on middle of base of abdomen above. Body moderately elongate, roughened above; median area of cephalothorax with transverse ridges. Pseudostigmatic organs short,

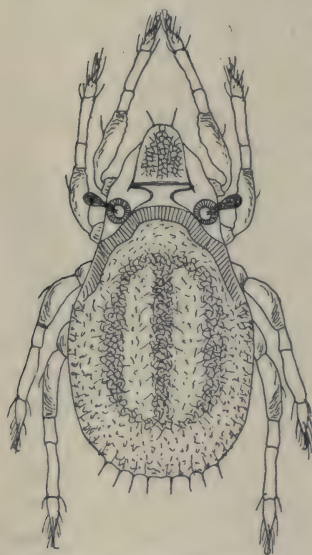


Fig. 1.—*Scutovertex petrophagus*.

clavate. A ribbed lamella-like area around base of abdomen. Abdomen above with scattered rugosities and 3 more or less definite stripes of interlaced ridges; at apical margin with 4 short, subequal stiff bristles each side.

The legs are rather long and heavy, the femora obliquely roughened above near tips, and also on the trochanters; tarsi very short, and more hairy than other joints, but one claw to each leg. Venter finely and irregularly

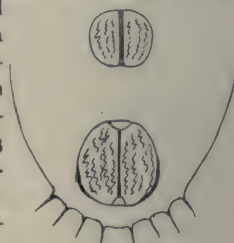


Fig. 2.—Venter.

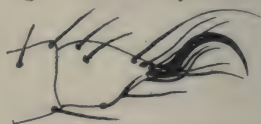


Fig. 3.—Tarsus and claw.

rugose, the coverings of the apertures being longitudinally rugose. The genital opening is about as broad as long, and scarcely its length in front of the larger and more elongate anal opening. The immature stages have a transversely corrugate dorsum. Length 4 mm.

Inhabits cavities in the surface of wet rock. Traghanic Falls, near Ithaca, N. Y. This genus is best separated from *Carabodes* by the fact that the tibiæ of legs are not pedicellate.

New Species of Butterflies.

BY ANDREW GRAY WEEKS.

Ecesia klagesii sp. nov. Expanse 2.10 inches.—Head above black, with a white dot above each eye and one betwixt the bases of the antennæ. Antennæ black. Club black above, beneath brown, with tawny tip. Thorax and abdomen black or very dark brown above, beneath tawny brown.

Upper side of fore wing tawny brown, with black markings. Costa black. Half way up the costa a black band runs downward, across the end of the discoidal space to the first submedian nervule, where it suffuses toward hind margin. Beyond this, on apical side, is an area of ground color of the same width. The apical area, representing one-fourth of the total wing area, is black, with a tawny brown dash in its central portion. In some specimens, owing to lack of any suffusion, this dash may be called a well defined spot. The hind margin is bordered with black from apex down to the second submedian nervule, and in some specimens this extends to lower angle. The inner marginal area is dashed with black. The median nervure is heavily black from the base up to the second submedian nervule.

Upper side of lower wing tawny brown, with black markings. A black line one-sixteenth of an inch wide extends from the base of the wing along the costa nearly to the upper angle. The hind margin is slightly dentated or wavy, and has a black border one-sixteenth of an inch wide, broadening somewhat toward anal angle. From the inner margin near the base of the wing a line of interspatial black spots extends across the wing, curving upward to the upper angle. These are, in some specimens, quite indistinct, owing to being dusted with tawny scales.

Under side of fore wing is governed by the markings of the upper surface. The black portions are not so dense and suffused into the ground color. The band of ground color running from costa to hind margin is more yellow, and the apical area is tawny brown. At the apex is a patch of dull yellow, crossed by a dark line which extends down to the lower angle one-sixteenth of an inch within the hind margin.

On the under side of the hind wing, the black line noted on the upper surface, is repeated. Below this, the area to the row of black spots is dull yellow. Below this spot the area to the black marginal border is light tawny. In the black hind marginal border is a wavy line extending from the anal angle through four interspaces.

Hab.—Suapure, Venezuela.

Variations.—The chief variations are due to the suffusing of the ground color on the black portion or *vice versa*. While some specimens are more or less suffused, thus have the markings distinctly outlined, I have one specimen in which the

row of black spots on lower wing is totally wanting on the upper surface, although it is slightly in evidence on the under surface. This species could not be found in the large collections of this country, nor the British Museum, nor has any description by a previous author been brought to light.

Ithomia hamlini sp. nov. Expanse 2 inches.—Head black, with a yellow dot behind the eyes, also one between the antennæ. Eyes surrounded by a yellow thread. Antennæ dark brown, merging to light brown towards club. Club black, with brown tip. Thorax above black, with a yellow collar and a yellow spot at junction of each costa; beneath, lemon yellow. Abdomen above black; beneath, lemon yellow. Legs black.

Upper side of fore wing mostly transparent, marked with brownish black and yellowish transparent areas. Costa black, edged with brown along discoidal space. Discoidal space transparent, with a yellowish tinge. From the base of wing a dark club-shaped dash extends upward to centre of discoidal space. From the centre of costa a broad brownish black band extends downwards across the end of discoidal space, terminating at hind margin just above the lower angle; the nervures and nervules in this band are black. Outside of this band is a broad transparent area, heavily dusted with lemon-yellow scales near costa. The apical area and hind marginal area are brownish black, with a slight suggestion of lighter spots in the interspaces near margin. The median nervure is brown. The inner marginal area below the median nervure is brown suffusing to dense black toward inner margin.

The upper side of hind wing has the same colors. The hind margin is bordered with a sixteenth of an inch brownish black border, bearing suggestions of lighter spots in interspaces. Inside of this, toward the base of the wing, is a band of brown extending from the upper angle downward, and swinging across the wing to the anal angle parallel to hind margin. Still nearer the base, bordering this brown band, a darker band runs across the wing horizontally, turning upward to the costa well outside the discoidal space. The discoidal space and the area surrounding it is transparent, slightly dusted with brown scales. The nervures and nervules are brown.

The under side of both wings is the same as upper surface, except that the interspacial light spots along the hind margins are more distinct, being very prominent on the lower wing.

Hab.—Suapure, Venezuela.

Variations.—The sixty specimens in my collection show no variation in size. The markings are identical in shape and location, but show considerable variation in their density and tendency to suffusion. The typical specimen above described is a fair average.

Thecla madie sp. nov. Expanse 1.10 inches. *Female*.—Head, palpi, thorax and abdomen above, dark mouse color; beneath, light mouse color. Antennæ black, with white annulation at base of each joint. Club black, with tawny tip. Legs light mouse color, with white annulations.

Upper side of fore wing dark mouse color. The basal area slightly blue.

Upper side of hind wing dark mouse color. Basal area light blue, dusted with mouse colored scales, shading off to mouse color toward upper angle and hind margin. From the lower submedian nervule, extends a delicate tail one-eighth of an inch long, tipped with white, and above it a similar but shorter tail extending from the submedian nervule. From anal angle a delicate white thread, following contour of hind margin, extends toward upper angle, disappearing almost midway. At anal angle is a tawny dot. Inner margin light gray.

Under side of fore wing light mouse color. A conspicuous dark line bordered with a white thread on outer side extends downwards from near costa to submedian nervule. The hind marginal area, for one-sixteenth of an inch inward, is somewhat lighter than ground color, and has suggestion of darker half circles in the interspaces. The inner margin is lighter than ground color, gradually shading into it.

Under side of hind wing light mouse color. A dark line, dusted with tawny and bordered by a white thread on its outer side, extends from centre of costa to centre of second submedian nervule, then turning upwards to centre of inner margin. This line is jagged, with angles in each interspace, and forms a continuation of the line on the fore wing, but more fully developed. There is a tawny spot at anal angle, blackish at angle. In interspaces, between the two tails, is another spot of lighter shade. The white marginal thread of the upper surface is repeated. The light hind marginal area of under side of fore wing is continued on hind wing.

The hind margins have a slight fringe of the ground color.

Hab.—Suapure, Venezuela.

This species could not be found in the larger collections in this country, nor in the collection of Druce, the British Museum, etc. It resembles *T. cleon* Fabr.

Thecla carteri sp. nov. Expanse .80 inch.—Head, thorax and abdomen nearly black above, with a few light blue hairs. Beneath, gray. Palpi white. Antennæ black, with indistinct white annulations at base of each joint. Club above, black; below, tawny. Legs gray.

Upper side of fore wing nearly black. The space within a line drawn from a point on inner margin just inside lower angle up to centre of median nervure and thence to base, is light blue.

Upper side of hind wing light blue at base, nearly white as it approaches costa and hind margin. There is a blackish border along costa, extending half way down hind margin. At end of submedian nervule is a deli-

cate thread-like tail, one-eighth of an inch long, tipped with white. Hind margin has a delicate gray fringe. The edge of hind margin has a fine whitish line, inside of which is a black thread. The submedian interspaces show the dark interspacial markings of the under side. Inner margin white.

Under side of fore wing grayish white, dusted with brown towards base. One-sixteenth of an inch within hind margin is a wavy line of blackish brown extending down to inner margin. The space between this and the margin is light gray, with prominent interspacial triangular spots of blackish brown, one-sixteenth of an inch within this line is another line extending from costa down to second submedian nervule, the intermediate space being nearly white. There is another similar line running across the end of the discoidal space only. From this line the dusting of darker color increases towards the base.

Under side of hind wing the same ground color. At centre of costa is a lunule, brown on its outer edge, white within with a black spot at its centre. From upper angle a brown line extends straight across the wing to the centre of the inner margin. Outside of this is a space one-sixteenth of an inch wide, of light gray. Outside of this, the area to hind margin is dark brown, broken by a series of interspacial lighter brown semicircles near the margin, the interior portion these semicircles being nearly black.

The hind margins have a thread of white.

Hab.—Suapure, Venezuela.

This species is nearly identical with *T. argiva* Hew., which has no tails. It is also near *T. tadita* Hew., which is in the Hewitson collection.

Thecla hosmeri sp. nov. Expanse .95 inch.—Head, thorax, abdomen above, black. Below gray. Palpi gray. Antennæ black, with microscopic white annulations at base of each joint. Club black.

Upper side of hind wing black, with slaty lustre. At the end of submedian nervule is a short thread-like tail. Below this, at end of second submedian nervule, is another longer tail, both black, with a white tip.

Under side of fore wing brownish slate color. From a point on costa, two-thirds distance to apex, runs a brick-red line, bordered on its outer edge with a white thread, down to submedian nervule.

Under side of hind wing brownish slate color. The brick-red line of fore wing is continued running downwards parallel to hind margin and meeting inner margin just above the anal angle. In the four lower interspaces this line becomes jagged, forming a series of semicircles. Outside of the first two of these semicircles are patches of brick-red, the lower one having a black point on its lower edge. At the angle is another brick-red patch or spot, smaller than the others, with a black point on its lower edge. Just within the hind margin, running from anal angle to the median nervure is a white thread.

Wings have a slight fringe of the ground color.

Hab.—Suapure, Venezuela.

This species is closely allied to *T. pisis* Godm. and to *T. gargophia*. Described from six specimens in my collection.

Euselasia tysoni sp. nov. Expanse 1 inch.—Head, thorax and abdomen above, mouse color. Below, gray. Palpi white. Antennæ mouse color, with minute white annulations at base of each joint. Club black, with whitish suffusion at base. Legs light tawny brown.

Upper side of fore wing mouse color.

Upper side of hind wing mouse color. Hind margin strongly dentated. At end of submedian nervule is a slight tawny spot.

Under side of fore wing light tawny brown. From a point just beyond centre of costa runs a tawny line across end of discoidal space, down to lower submedian nervule. Hind margin bordered with tawny, with a suggestion of a white thread. From a point on inner margin one-sixteenth of an inch from lower angle runs a black thread or dash upwards to submedian nervule. The space between this and hind margin is whitish near the angle.

Under side of hind wing light tawny brown. Hind margin bordered with tawny, with a white thread in interspaces. Within this tawny border, near base, is a series of silvery-white elongated spots forming a prominent marginal border. The inner side of these spots is lined with black. The tawny line near centre of fore wing is continued, being parallel with hind margin and curving upward to centre of inner margin.

Hab.—Suapure, Venezuela.

There is one specimen of this in the Druce collection, but unexamined.

Charis suapure sp. nov. Expanse .95 inch.—Head, antennæ, thorax and abdomen above blackish brown. Beneath, somewhat lighter. Legs the same.

Upper side of fore wing dark blackish brown. In discoidal space, near base, is a blackish spot, repeated in space below. Beyond this is another similar spot in the discoidal space, repeated and somewhat larger in submedian space below. Beyond this is a third spot in the discoidal space, but this last is not repeated in space below. Outside of this spot is a broad blackish line of connecting interspatial spots from costa across the end of discoidal space, turning at median nervure and running parallel to hind margin down to inner margin, near the center of the wing area. Beyond this is an area of the ground color and then a prominent orange line or band running from a point just above the centre of costa towards hind margin, turning at median nervure and running down to inner margin one-sixteenth of an inch in from hind margin, forming nearly a semicircle. This line, the prominent feature of the markings, is broader at costa and terminates in a point at inner margin. The apical area, outside of this

and the hind marginal area, is the same color as the discoidal spot, blackish.

Upper side of hind wing is the same, except that the spots suffuse, nearly forming a band. The orange band of fore wing is continued, but narrower, extending from upper angle to anal angle parallel to hind margin. The inner margin is of the ground color.

The wings have a slight fringe of the ground color.

The markings of the under side of both wings are similar to those of the upper surface, although slightly lighter.

Hab.—Suapure, Venezuela.

This species resembles *C. cecias* Hew.

Methonella carveri sp. nov. Expanse 1.50 inches. *Male*.—Head black. Antennæ black. Club black, with brown tip. Thorax above black, with yellow hairs at base of wings; beneath, orange. Abdomen above black; beneath, orange. Legs black.

Upper side of fore wing orange, black and yellow. Costa black. The basal area within a line drawn from near centre of costa diagonally across the discoidal space to a point one-quarter of an inch within the margin, thence downwards parallel to hind margin to inner margin is orange. The apical and hind marginal areas, outside this line, are black. In the centre of the black apical area, running from costa diagonally across it nearly to hind margin is a yellow band. Below the end of this, in the margin area, is a yellow spot, with a suggestion of a smaller one below it. Inner margin orange.

The upper side of hind wing is of the same orange. Costa orange. From the base a black dash extends upwards a quarter inch along costa. The hind margin has a broad black border, dentated on its basal side. Within this border are a series of interspacial yellow spots. Inner margin orange.

Under side of both wings the same as upper surface, except that the coloring is not so brilliant.

Female.—Upper surface of both wings the same as male, excepting a fuller development of the markings. The yellow band of fore wing extends or curves downwards to near inner margin, forming almost a semi-circle. There is also a white spot on margin at apex. The yellow spots of marginal area of hind wing are much more prominent, and a white dot appears on the margin at the end of each nervule.

Under surface of both wings the same as upper surface, except less brilliant.

Hab.—Suapure, Venezuela.

Taken in April, 1899. Not in British Museum, or other large collections.

Nymphidium quinoni sp. nov. Expanse 1.30 inches.—Head and thorax above, dark brown; beneath, white. Abdomen above, brown, slightly lighter than thorax; beneath, white. Antennæ dark brown, with somewhat lighter tip, and very minute white annulations at base of each joint. Legs white.

Fore wings above, creamy white, excepting the costal and hind marginal areas, which are light brown, with darker markings and spots. The brown of the costal area is well developed, covering nearly all the discoidal space, darker at costa than below. In the discoidal space close to the base is a black dot; beyond this, near centre of discoidal space, is a large black spot; at the end of discoidal space is a black line, and this line, with a little of the surrounding brown area, extends downwards into the creamy white ground color, forming a knob more or less prominent. The apical and hind marginal areas are light brown, edged with darker brown on the basal side. Down the central part of the brown hind marginal area runs a line of interspatial black dots. The hind spots bear a dark border distinctly touched with white at end of the first and the lowest submedian interspaces. Inner margin creamy white.

Upper side of hind wing creamy white. The hind margin has a generous brown border, a continuance of the same on the fore wing and identical in every respect, including the interspatial black dots, the marginal white markings, etc.

The under side of both fore and hind wings is the same in its markings as upper surface, but the white lacks its creamy tinge, and the marginal border is nearer mouse color than brown. The colorings of upper surface are repeated but decidedly deadened, and this deadening of under surface color is too well known to need any detailed description.

The interspatial dark marginal spots are more prominent, owing to the lighter back ground. The dark edging of the hind margins is also more noticeable, and the white marginal spots of upper surface are much more prominent.

Hab.—Suapure, Venezuela.

Variations.—Barring variation in size, the colorings in various specimens seem much the same. The greatest variation is in the "jutting" of the brown costal area into the creamy white ground area of fore wing, noted above as near end of discoidal space. The density of the brown of marginal border also varies.

Taken in November, 1899. It resembles quite closely *N. pelops* Cram.

Carystus richardi sp. nov.—Expanse 1.30 inches.—Head and collar bronzy brown. Antennæ black. Club black above, brown beneath. Thorax above, dark brown, with some dark gray hairs; beneath, white.

Abdomen above, dark brown, the segments edged with white; beneath white. Legs black above, brown beneath.

Upper side of fore wing dark brown. Below the median nervure and bordering on it, is a prominent semitransparent white spot, nearly square. Above this, and nearly joining it, is a small white dot in the discoidal space. At the bases of the two interspaces above this large spot are two smaller white spots in a line drawn towards the apex. Below the costa, two-thirds the distance to apex, are two small white spots, the upper one merely a dot. These make a total of six spots.

Upper side of hind wing dark brown. A dash of white, or rather a series of interspatial white marks, extends across the centre only of the wing in a line drawn from the upper angle to a point near the base on inner margin. This white area represents a small portion only of the total wing area.

Hind margins have a slight gray fringe.

Under side of fore wing the same as upper surface, except that below the large white spot is a space of similar size, heavily dusted with white scales, suffusing towards the hind margin. A similar, though less prominent, dusting of lighter scales appears outside the two subcostal spots.

The lower half of under side of hind wing is dark brown. Above a line drawn from upper angle across the lower edge of the white spots and ending near the base of the wing, the area is a creamy white, excepting the costal area, which is brown. The lower edge of this costal area is separated from the creamy white by a line drawn from base to upper angle, no suffusion whatever being apparent. In this creamy white area between the semitransparent spots and the inner margin is a dash of brown.

Hab.—Suapure, Venezuela.

Described from five specimens in my collection taken in January, 1900. The white markings show no variation. This species resembles *C. lafrenayi* Latr., but the white markings on hind wing are not so large, and in *lafrenayi* the direction is from upper angle downwards parallel to hind margin, not straight across the wing. The under side of hind wing differs in location and extent of white markings.

Pythonides hoyti sp. nov. Expanse 1.80 inches.—Head, thorax and abdomen above, dark brown, with golden brown hairs; beneath, light brown. Antennæ dark brown.

Upper side of fore wing brown. Across the discoidal space is a semitransparent spot of peculiar shape, straight on its basal side, but forked on its marginal side, forming a figure . In the first submedian interspace is another similar spot somewhat nearer the hind margin. Above the upper point of this, in the interspace next above it, is a square spot.

In the apical area are three subcostal elongated semitransparent spots, the uppermost and lowest ones being a little nearer hind margin than the central one. Near base, about one-third distance to apex is an indistinct band of dark brown running from costa to inner margin. Another band runs across the two lower interspaces between the first band and hind margin. Below the subcostal spots is a dusting of dark brown. This, with the band last mentioned, suggests a band across the wing broken by the white spots and ground color at central portion of the wing, this partially developed band being continued on hind wing.

Upper side of hind wing brown, matching fore wing. The wing is crossed from costa to inner margin, by two darker bands, these being continuations of the bands of the fore wing. The basal and anal areas of the wing are covered with brown hairs, causing an apparent suffusion of the bands.

Both wings have a fringe of the ground color.

Under side of fore wing very light brown, excepting the costal and apical areas, which are darker. The spots of upper surface are repeated, also the dark bands.

Under side of hind wing very light brown, the hind marginal and basa areas being somewhat darker. The basal area is dusted with light brown scales. The dark bands of upper surface are repeated.

Hab.—Suapure, Venezuela.

The semitransparent spots closely resemble those on *P. lucullea* Hew.

Taken in the latter part of January, 1900.

***Pamphila bobæ* sp. nov.** Expanse 1.10 inches.—Head, palpi, antennæ, thorax and abdomen above, very dark brown, nearly black; beneath somewhat lighter.

Upper side of fore wing dark velvety brown, with no markings, except very indistinct bands of a darker shade, noticeable only on close inspection. The first crosses basal area, the second the end of discoidal space, the third the hind marginal area. In the interspaces along hind margin is a series of similarly indistinct dark markings.

Upper side of hind wing very dark velvety brown, costal area somewhat lighter.

Under side of fore wing lighter than the upper surface, the dark markings being slightly more noticeable. The lower submedian area near base and entire inner marginal area are very light.

Under side of hind wing is the same as fore wing, the dark markings of fore wing being repeated. Owing to the very dark shade, these markings scarcely show on the upper surface.

Hab.—Suapure, Venezuela.

Taken in January, 1900.

Pamphila brooksii sp. nov. Expanse 2 inches.—Head and palpi, tawny brown. Thorax above, dark brown, with tawny brown shoulders; beneath, tawny brown. Abdomen above, dark brown; beneath white. Legs tawny brown. Antennæ dark brown, whitish at base of club. Club above dark brown; beneath dark brown, with whitish tip.

Upper side of fore wing dark brown. Costa tawny brown half way to apex. Basal portion of wing slightly dusted with tawny brown. Across the centre of discoidal space there is a prominent white spot. Below this, in second submedian interspace, is another spot, but nearer the hind margin; still nearer the hind margin, in interspace above, is a third white spot. These three white spots are of nearly equal size. Near the apex, extending from costa downwards are three small white spots, and a fourth one still farther down. Hind margin has a slight tawny brown fringe.

Upper side of hind wing dark brown; costa somewhat lighter. Hind margin has a slight tawny brown fringe.

Under side of fore wing nearly black, except the costal and apical areas, which are a rich tawny brown. The white spots of the upper surface are repeated. In the interspaces above the lower of the four apical white spots are two black specks, one above the other, showing a tendency to transparency at their centres. In the lowest submedian interspace, at its centre, there is a dusting of light scales. Hind margin is edged with a fine black thread.

Under side of hind wing a rich tawny brown, darker in marginal and basal areas. In the first and third submedian interspaces is a white dot just below the end of the discoidal space.

Hab.—Suapure, Venezuela.

Taken in the latter part of July, 1899.

RECENTLY the writer described a new species of the genus *Lichenochrus* from Costa Rica as *L. marmoratus* (Proc. Acad. Nat. Sci., Phila., p. 814, 1905). It has been found that Sjöstedt applied the same specific name to a very different species of the genus from West Africa (Bihang till K. Svenska Vet.-Akad. Handl., xxvii, afd. iv, No. 3, p. 32), and, as his name has considerable priority over my name, that of *Lichenochrus deciduus* is proposed to replace *L. marmoratus* Rehn.—J. A. G. REHN.

PSEUDORTHOSIA VARIABILIS var. **PALLIDIOR** n. var.—Expanse 40 mm.; anterior wings a warm but not dark reddish, more yellowish basally, with the stigmata dark, but the bands of the type absent, the two pale lines in the subapical field faintly indicated against a reddish background. Glenwood Springs, Colorado, in Mr. J. Mason's collection. I had taken it for a new species, but specimens from the northwest, kindly sent to me by Dr. Dyar, show that it is only a pale form of *P. variabilis*.—T. D. A. COCKERELL.

Description of two new genera and three new species of Aphididae.

BY THEO. PERGANDE.

While examining a series of Aphids, received by the Bureau of Entomology of the U. S. Department of Agriculture, from Mr. S. I. Kuwana, of the Imperial Agricultural Experiment Station at Nishigahara, Tokio, Japan, I discovered among them a number of specimens of two highly interesting genera, one of which has been previously discovered on the Island of Java. These the writer takes the liberty of describing herewith.

NIPPONAPHIS n. gen.

This remarkable aphid, which is represented by a single species, resembles in venation and in the strongly annulated antennæ the genus *Schizoneura*, but differs from the latter in having antennæ which are only 5-jointed; the two basal joints short and subequal in length, the following three joints of almost equal diameter and strongly annulated; joint 3 is much the longest and longer than the remaining two combined.

Head, including the eyes, narrower than the thorax and broader than long, its frontal margin slightly convex. The two discal ocelli are placed in front of the eyes, and the third one at the middle of the anterior edge. Posterior tubercle of the eyes very small. Nectaries represented by pores only, and situated far back, apparently on the sixth abdominal segment. Tail short, broad, semicircular; last ventral segment notched at middle of posterior edge.

Third discoidal vein of the front wings with one fork.

Nipponaphis distychii n. sp.

The note sent by Mr. Kuwana is rather short and unsatisfactory; it reads as follow: "Head and eyes black. Prothorax dark purplish yellow. Dorsal aspect of meso-metathorax black. Abdomen dark purplish brown. Producing galls on the leaves of *Distychium racemosum* at Nishigahara, October 23, 1905."

The antennæ of the migrants—the only form sent—reach about to the base of the abdomen. The two basal joints, as usual, shortest and subequal in length; the first joint cylindrical and originating on the under side of the head; joint 2 slightly the stoutest and broadly rounded at the apex; the remaining three joints cylindrical and of almost equal thickness; the third longest, longer than the remaining two combined, being divided by from 41 to 44 rather deep annulations; the fourth longer than the fifth, with from 20 to 24 annulations; while the fifth is divided by from 11 to 15 annulations, its terminal spur short, stout and truncate at the apex, where it bears three or four short bristles.

Thorax about as long as broad and slightly broader than the abdomen. Abdomen elongate-ovoid, tapering posteriorly and furnished on each side with four slightly projecting blackish stigmata in front of the nectar pores. Legs normal and provided with sparse short hairs.

Wings pale dusky, with slightly darker shading along the veins; the costal cell and the stigma still darker, costa, subcosta and the veins blackish. The first two discoidal veins arise quite near each other and are rather far apart at the hind margin of the wing; the fork of the third discoidal is unusually long and narrow, while at least two-thirds of the stem of this vein is obliterated; in rare cases the fork is extremely short, while occasionally the third vein is simple as in *Pemphigus*. The stigma is long and lanceolate, with the stigmal vein arising about the middle, its basal half gently curved, the rest almost straight and terminating in front of the apex of the wing. The two discoidal veins of the hind wings are at least three times as far distant at the base as those of the front wings. The surface of all of the wings is rather densely scaly. Length of body about 2 mm.; expanse of wings about 7 mm.

TRICHOSIPHUM n. gen.

This is another abnormal genus and undoubtedly nearly related to the genus *Greenidea*, which was properly established by Schouteden for *Siphonophora artocarp*i Westw. Both of these genera agree in the very hairy nectaries, a character not observed in any of the other known genera. The principal differences between the two, in respect to the nectaries, are as follows: In *Greenidea* the nectaries of the migrant and of the apterous female, pupa, etc., are rather long, slender, almost entirely cylindrical, or slightly narrower at both ends and relatively of about the same length; whereas in the new genus the nectaries of the migrant are extremely long and cylindrical, while those of the apterous females are short, very stout and very distinctly fusiform. This diversity in the size and shape of these organs in the different forms justifies my opinion that

this constitutes a genus distinct from *Greenidea*, although closely related to it.

The characters of this new genus are: Antennæ of migrant as long or longer than the body, composed as usual of six joints, all of which, excepting the two basal, are furnished with long and bristle-like hairs, the third being longest. Front of head broad and quite straight; posterior tubercle of eyes bearing three ocelli. Abdomen sparsely hairy. Tail short and broadly triangular. Nectaries very long, almost as long as the whole body, cylindrical, straight, curving outwards towards the apex and profusely covered with long, bristle-like hairs. Venation similar to that of *Aphis*.

In the apterous female, the whole body, including the antennæ, nectaries and legs, is covered with stout hairs or bristles; head, etc., as in the migrant. Nectaries short, or about one-fourth of the length of the body, stout and distinctly fusiform; curved outwards.

Only two species exhibiting these characters are thus far known to me. The first of these represented by migrants, pupæ, apterous females and larvæ, was discovered by Dr. L. Zehnter, January 10, 1902, at Salatiga, Java, on *Anona muricata*. Following is its description:

***Trichosiphum anonæ* n. sp.**

The material representing this species was, as usual, preserved in alcohol, and for this reason the original coloration has vanished. It appears, however, to have been yellowish green in the migrants, with the exception of the greater part of the abdomen above, which appears to have been brown.

Migrant.—Antennæ 6 jointed; the two basal joints, as usual, shortest and subequal in length, the first joint stoutest; joint 3 longest, longer than the spur of the sixth joint and but slightly shorter than the fourth and fifth combined, both of the latter subequal in length; all of these joints are furnished with rather long and stiff hairs; there are also from four to six small, transversely oval sensoria near the base of joint 3. The antennæ are slender and about as long as the whole insect.

Front of head quite straight, slightly indented about the middle, and furnished with about six long and slender hairs, while similar hairs are scattered over the upper surface of the head.

Head broader than long, and, with the eyes included, broader than the

prothorax. Eyes large, their posterior tubercle highly developed, each bearing three ocelli. The two ocelli on top of the head are placed close to the anterior edge of the eyes, while the anterior one is situated on the under side of the head.

Rostrum long, reaching to the abdomen. Prothorax broader than long and slightly broadest posteriorly, provided with a few lateral hairs on each side.

Abdomen about one-half the length of the body, its lateral edges quite straight, and broadest near the region of the nectaries, the terminal end broadly triangular, provided with sparse and fine hairs, which are still more numerous along the sides and on the last segment.

Tail short and broadly arcuate, bearing a small triangular projection at the middle of the external margin, its two sides being quite sharply serrate; each side bearing apparently four bristles, with a few smaller ones on its surface. The last segment is broadly semi-circular, and bears along its edge quite a number of still longer and stouter curved bristles.

Nectaries very long, almost as long as the whole insect, cylindrical, straight and slightly curved outwards toward the apex, and covered profusely with long and fine divaricating hairs or bristles.

Legs rather long and slender, provided on femora and tibiae with stiff hairs. Front wings much longer than the entire body, the venation resembling more or less that of *Aphis* and *Callipterus*. The first two discoidals are distant at base and about seven times as widely separated at the apex; the first vein is almost straight, whereas the terminal one-third of the second vein is much curved toward the base of the wing; the third discoidal with its two forks resembles somewhat that of *Callipterus*; the basal half or less of this vein, or the stem of it, is obliterated; the stigma is long, narrow, parallel; stigmal vein gently curved and terminating at the apex of the wing. The hind wings are much shorter and much narrower than the front wings and have the usual oblique veins, which are quite straight, far apart at base, and more than twice as far apart at apex.

The pupæ have the body and legs much more hairy; the hairs of these parts are longer and stouter than in the migrant, while those of the tail and end of the body are shorter and finer. The upper side of the abdomen is marked with numerous pale brown spots of varying size, followed by a brown band, the latter divided at the middle, and itself followed by a very large spot between and touching the nectaries. In other respects, the pupæ resemble the migrant, excepting that the nectaries are not quite one-half the length of the body, and are also comparatively stouter and slightly tapering toward both ends. The triangular point of the tail is also somewhat longer.

Apterous Female.—Body pyriform, the head, pro- and mesothorax being narrowest, the rest of the body broadly oval. Front of head straight, or almost so, and destitute of frontal tubercles. Eyes of the usual size, their posterior tubercle prominent and furnished with three large and rather globular ocelli. Antennæ about two-thirds the length

of the insect; joints 3 and 6, including the spur, longest and subequal in length, each of them about as long as joints 4 and 5 combined; the fifth slightly longer than the fourth; all, except the spur, are provided with a few long stiff hairs or bristles. Tail and end of body as in the migrant; nectaries much shorter than in either the migrant or pupa, or only about one-fourth the length of the body, rather stout near the middle, tapering toward each end and curved outwards. Abdomen without spots, the whole body, including the nectaries and legs, profusely provided with stiff hairs or bristles, similar to those of *Chaitophorus*. Length about 1.4 mm.; diameter across the abdomen about 0.8 mm.

***Trichosiphum kuwanai* n. sp.**

Among the material of aphids sent by Mr. S. I. Kuwana, of the Imperial Agricultural Experiment Station, Nishigahara, Tokio, Japan, were found three parcels of alcoholic specimens of apterous females, larvæ and a few pupæ of this species, though none of the migrants. All were found living upon *Quercus serrata* on the 27th and 29th of June, and on the 2nd of August, 1905. Those taken in June are stated to be of a deep black color, whereas those obtained in August are said to be reddish brown. An examination of the entire material convinces the writer that all of them belong to the same species, which he herewith takes pleasure in dedicating to Mr. Kuwana.

This is, therefore, the second female, in which the nectaries of the apterous females are short, stout and fusiform.

Apterous Female.—Antennæ about one-half the length of the body; joints 3-6, including the spur, varying more or less in length in different specimens and frequently in the same individual; the third joint as usual is longer than the two following joints combined, the latter subequal in length. All of the joints, excepting the spur, are provided with long, stiff bristles. Front of head broad and quite straight. Eyes large, their posterior tubercle much elongated and bearing three large ocelli at the end; sides of the thorax quite straight, broadening more or less distinctly posteriorly, while the abdomen is almost circular in outline. The legs are rather long and stout, and like the rest of the insect, profusely covered with stout stiff bristles. Nectaries usually somewhat longer than the third antennal joint, or about one-half as long as the abdomen, stout, tapering toward each end and curved outwardly, covered with numerous long bristles and minute spines.

Tail short, broadly triangular, bearing a short triangular point at the centre of the posterior edge, densely covered with minute sharp points and furnished on each side with three or more long stout bristles. Last

ventral segment broadly emarginate. In the older specimens the coloration appears to be quite uniform, whereas in younger females, there are six irregular rows of large, oval or roundish dusky or brownish spots on the abdomen, interspersed with numerous smaller spots of two sizes, each of the latter bearing a slender black hair; there are also four large lateral spots in front of the nectaries, while the head and thorax are entirely of a dark color; there are also two pairs of dark spots on the meso- and meta-thorax, the anterior pair on each of these segments being much the smaller and transversely linear.

The larvæ are very much elongated, their lateral margins quite parallel; the body is also more or less distinctly spotted, and the hairs of the abdomen are rather long and slender. Nectaries short, about the length of the posterior tarsi, stout at base, elongate-conical, not reaching to the end of the abdomen; just behind each of them is a stout and conical lateral tubercle, about one-half the length of the nectaries, bearing at the apex a long, slender, backwardly directed bristle, while a similar though smaller pair of tubercles is situated at the posterior margin of the following segment. The last dorsal segment is broadly triangular.

The pupæ are spotted similarly to the younger apterous females, and are also very hairy, though the nectaries are longer, quite slender, though still somewhat fusiform.

Texas Notes—I.

BY E. DWIGHT SANDERSON.

I.—*Omileus epicæroides* Lec.—A snout weevil injurious to peach foliage. Injury by this species to peach foliage was first called to our attention by two correspondents in East Texas early in March, 1904. The beetles were reported as seriously injuring the foliage of young peach trees. The same insect had done similar injury the year previous. Examination showed them to be wingless, and their control therefore appeared simple. The insects seemed most numerous during the first ten days of April. Visiting Dialville, in the heart of the peach belt, on April 29th, we found them still abundant. The foliage had been eaten much as by *Lachnosterna*. The sexes had been mating for some time. The beetles were shaken from the trees with great difficulty so that jarring was not feasible. They were noticed most commonly on tender sprouts from oak stumps. It developed that they were injurious almost entirely on or adjoining newly planted orchards on land just cleared off and surrounded by oak. It seems to us

evident that the normal food plant is oak. A band of "tanglefoot" was placed around the trunks of several trees at evening, as the beetle seems to feed at night mostly, and several beetles placed at the bottom of each tree. Out of eight, three were found covered with the sticky mixture at the base of one tree and none upon it. There is, no doubt, that such a band placed on trees about March 1st will entirely protect them. Where they are already upon the trees, thorough spraying with strong arsenate of lead or Paris green, one-half pound per barrel, was reported as effective.

The habits of the weevils seem to be much like those known of the imbricated snout weevil (*Epicærus imbricatus*), which



Eggs on leaf (enlarged)

this weevil quite closely resembles. The eggs are laid upon fallen foliage or rubbish, the leaf being folded over them, in bunches of from two to nine, thirty-five averaging four each. While ovipositing the females remain mostly upon the ground, feeding but little, while the males are in the trees and occasionally descend to them. In no case were they observed going into the loose soil. Two females laid 50 and 60 eggs. The eggs hatch in from three to eight weeks, averaging about a month, hatching mostly about the middle of May. The larvæ feed upon roots, probably of the oak, but we were unable to rear them.

This species was first described by LeConte and Horn in

their Monograph of the Rhyncophora from Texas, 1876; since then we have seen no published record of the species as of economic importance.

The close resemblance of this species to our common imbricated snout beetle (*Epicærus imbricatus*) led the writer to question whether or not it too might be wingless, in which case the same means of control would obviously be available. No description of the wings could be found, or any mention as to whether they were functional or not. Mr. E. A. Schwarz of the National Museum, therefore, kindly examined some specimens at my request and writes me: "I have examined several specimens of our common *Epicærus imbricatus* and fail to find any trace of hind wings. Moreover, the elytra are connate, the humeri absent and the metasternum short, all characters indicating a wingless genus. Dr. D. Sharp, in the *Biologia Centrali-Americana*, divides the family Otiiorhynchidæ into two divisions, the winged ones and the wingless genera. The genus *Epicærus* is placed among the latter." So there is still something to be learned about our most common beetles. Lacking wings, the imbricated snout beetle should also be readily controlled and kept from ascending fruit trees by means of sticky bands around the trunks.

2. The Texas Grape Fidia (*Fidia cana*). Specimens of this leaf beetle were received May 17, 1904, from D. Garner, Dripping Springs, Hays County, Texas, who reported them to be ruining his grape crop. May 29th he wrote us: "The first I knew of it, it was riddling the tender leaves before the vines bloomed. As soon as the fruit was set they were at work upon it. When we spray our vines they get inside of compact bunches and bite the berries near the stem. They appear to have the trait of 'sulling' or dropping to the ground as does the curculio." Specimens of their work sent showed the leaves badly eaten, and the berries gnawed exactly as is done by the grape root-worm (*Fidia viticida*) of the east. So far as recorded, *F. cana*, as we determined the insect, is peculiar to Texas, and it seems probable that it may prove equally troublesome to grape growers there.

3. The Southern Corn Root-worm (*Diabrotica 12-punctata*

Oliv.). The larvæ of this beetle caused considerable injury to young corn early in April, 1903, through central Texas. In the worst injured field at College Station, the larvæ were found working upon the roots of Johnson grass, where they seemed to be older than on corn. About one-third of the hills of corn were killed and a considerable acreage was replanted. Several nearly full grown larvæ were placed in breeding cages and pupated about April 29th. One beetle emerged from these May 12th.

January 16, 1904, the adults were found very numerous upon alfalfa. Females of this lot examined had well-developed eggs. They were again destructive to garden stuff, especially snap beans the first week in April, but the larvæ did not do much injury to corn. The adults of the second generation were numerous May 6, 1904. (For the best account of this species on corn in the South, see Quaintance, Bulletin 26, n. s., Div. Entomology, U. S. Dept. Agr., p. 35).

I THINK the editors of ENTOMOLOGICAL NEWS should be proud of their journal. I notice the April number has four full plates and 15 to 20 text figures. Is there any entomological journal published at twice the price that can beat that? Aldrich's plate is a work of art.—E. B. WILLIAMSON.

OPHISMA TROPICALIS Guenée, in Fairmount Park.—I exhibited this moth at a recent meeting of the American Entomological Society, not having determined it. Mr. William Beutenmuller who was present at the meeting wrote me a few days after as follows: "The strange Noctuid from Fairmount Park, exhibited at the last meeting of the Society, is *Ophisma tropicalis* Guenée. The species is subject to considerable variation, and we have one specimen from Jalapa, Mexico, in our collection, almost exactly like it. We also have specimens from Coatepec, Mexico; Aroa, Venezuela and Rio Janeiro, Brazil." The "Biologia" gives the following distribution: Panama, Colombia, Guiana, Brazil, Cuba. The moth was captured by Mr. Herman Hornig on the evening of August 5, 1905. He gives the following account: "It was caught at Chamounix, Fairmount Park, Philadelphia. The flight of the moth is similar to that of the Sphingidæ, the wings supporting the body while feeding, the food in this case being well fermented molasses. It was caught about 8.10 P.M." It is difficult to tell whether the moth was only an accidental find, brought here by commerce, or whether it has obtained a foothold like the big Mantid, *Tenodera sinensis*.—HENRY SKINNER.

Notes on Mosquitoes.

BY DR. S. E. WEBER, Lancaster, Pa.

(Plate X)

Culex pipiens Linnaeus.

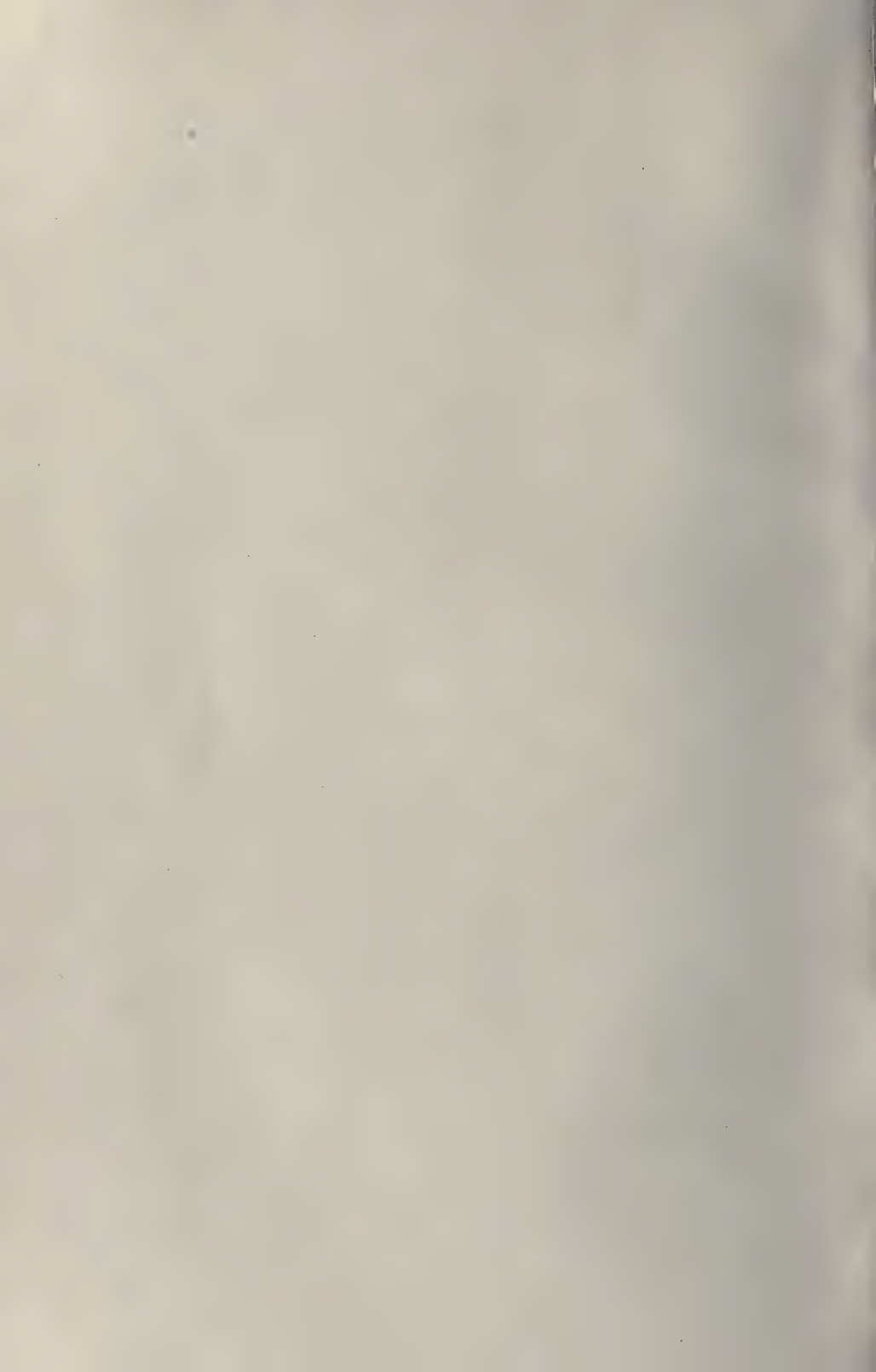
This domestic species which loves human habitations, and is found throughout the greater portion of the civilized world, is the commonest mosquito about Lancaster and other localities in Pennsylvania. It is still looked upon as breeding in rain barrels or any other receptacle containing fresh water, but I have long known this species and most of its varieties and some closely allied forms, as barn-yard mosquitoes breeding in manure water. In the plate is shown a typical breed-place, where a sufficient number of eggs were deposited every day during the season to more than supply each inhabitant of the city with a mosquito of this species alone, aside from the more dangerous species of *Anopheles* and others. The observations made in this combination of neglected door yards and manure yards for three stables during the summer of 1904 and 1905 show the percentage of adults produced from a certain number of eggs deposited to be sufficient also to supply the eastern section of Pennsylvania with *C. pipiens* mosquitoes.

In one yard was found a nest of 3 rain barrels, in the other were two, making 5 rain barrels, 3 manure piles, 3 water closets and some tin cans, agate-ware pots, etc., containing water with larvæ. In the left hand corner of the stable yard is shown a portion of a manure pit containing water from which a one gallon dip, taken last October, brought over 2000 *C. pipiens* larvæ, which furnishes an idea of its contents. The water in one of the rain barrels when first seen was so packed with larvæ that for over one-half inch from the surface it was about the consistency of gelatine. One of the most interesting facts with reference to the breeding habits in the rain barrel as compared with the manure water is the choice of the various species or varieties of species under the shield of *C. pipiens*. In the number of larvæ mentioned there were 14 distinctively characterized species, which resulted in five separate forms of adults which were not found breeding in the rain barrels so close by.



A TYPICAL BREEDING AND HIBERNATING PLACE FOR MOSQUITOES, COPROPRAGUS
FLIES AND PSOCIDÆ IN THE CITY OF LANCASTER, PA.

2142



The first appearance of *C. pipiens* in the season of 1905 was noticed in the evening of April 14th. In 1906 it appeared April 17th; the first deposit of eggs was made April 21st—2 masses—hatched April 28th. Three masses of April 28th hatched April 30th; on the latter date 4 masses were deposited; May 2nd, 10 masses; May 3rd, 17th and May 14th, 33 masses in one rain barrel. Let us note the egg deposits in one barrel throughout the season of 1905: On May 9th (the first deposit), 2 masses; May 10th, 10 masses, then more or less every day, and a few cool days no deposits. In June the highest number deposited was 16 masses. In July the number reached from 18 to 30, and in some prolific depositing periods through the month of August, 34 were found. A count of 34 masses, September 10th, showed 6962 eggs as the deposit of a single night; October 1st, 26 masses, 6554 eggs; October 2nd, 38 masses, 6525 eggs. Egg laying now decreased to 6 or more masses, some days none, and on a warm day, as October 10th, 21 masses—4429 eggs; no more deposits from that on to October 15th, 23 masses; then October 17th, 12 masses; October 20th, 4 masses; October 25th, 6 masses. No eggs were deposited from the last date until November 1st, 7 a.m., 1905, which was the last deposition of the season, and was made in a bucket containing manure water. The last deposition which took place in 1904 was 2 masses on October 31st.

The time of egg laying changes with the stage of the season. Most of it is expected in the early morning hour. In spring it does not occur as early as in mid summer, in the latter part of August it is already at about 6 a.m. that the last depositions are noted, and by the closing of the season 7 a.m., and a deposition has been found as late as 10 a.m. in the latter part of October, but at no time have I observed any deposits in day time during the summer.

The minimum duration of the entire life round for *C. pipiens* as observed during the month of July was eight days and nine hours. This is possibly the shortest period on record for this species. The mass was composed of 392 eggs and was remarkable for its percentage of production, which was 365 adults—159 males and 206 females, and still more remarkable is the

fact that they were bred in a rain barrel which had been recently used for petroleum. The atmospheric conditions and environment are the main features in the different stages of the life history, which varies greatly according to these influences. This species is possessed with a high degree of tenacity, as shown by experiments which can not receive mention here. Its power of resistance to cold is unusual. In a collection of 26 masses of eggs, October 12, 1904, 12 masses hatched October 15th; 5 more hatched on October 18th, and the rest became water logged. These larva were kept for winter observation. On the morning of November 1, 1904, a rain barrel was found frozen over, the ice being about $\frac{1}{2}$ inch thick, with the larvæ imbedded and apparently lifeless. Some were taken in the house and thawed out, while others were left in the barrel to thaw out through the day. Of 100 larva so treated only 3 were found dead, which was apparently due to injury between the cakes of ice. The other larvæ in the same barrel seemed not affected, more than a check to their usual activity. On November 12th the barrel was again frozen over and 57 larvæ were taken out, which were solidly imbedded in ice; after thawing out, 5 were dead from injury, and the balance were as lively as before. The larvæ now diminished in numbers. Through flooding of the barrel the remainder were lost. Of the 52 taken from the barrel after being frozen twice, twenty were found dead November 15th. From November 17th to 22nd there were 9 pupations: 1 on the former and 5 on the latter date, though first issues were November 24th, 1 ♂ and 1 ♀. The last issue occurred December 12th, with a total of 14 adults, 7 ♂ and 7 ♀, after being frozen twice. This is not the least this species or varieties of the same will endure since I have made numerous other observations, and in some instances they have even been allowed to freeze in ice from three to four times in larval and pupal state, and have come to maturity. In one instance a particular variety of a generation hatched September 25, 1905, 305 larvæ were entirely frozen in ice on the nights of November 2, 3, 11 12 and 13; for the first four days they were thawed out by noon of each day, but on the last day of freezing remained in the ice

for over 24 hours. After all these hardships the larvæ were lively, and were now taken indoors, but in a few days most of the number died. A small number survived, which pupated, and by December 9th 1 ♂ and 1 ♀ issued; after being perfectly dried up in a bucket for one week 15 larvæ were found dead, and from 7 pupæ in the same condition issued 3 ♂ and 4 ♀ on December 16 and 17, 1905. The same is practically true of another generation of a different variety of the same species, which was allowed to go through the same process at the time.

The last larvæ from masses of October 12, 1904, died February 14, 1905. The last larvæ and pupa, which died and were from the season of 1905, were from eggs deposited October 9th in the evening, and hatched October 14th, died March 10, 1906; this extends the period of prolonged larval existence to almost 5 months. This is not only a feature in winter, but may occur in regular season, when, from want of food, larval life may be extended 4 or six weeks and over.

Some of the species associated with *C. pipiens* in rain barrels of the yards in question were *C. restuans* Theo., *C. territans* Walk., *C. salinarius* Coq. and *Anopheles punctipennis* Say.

Observations of extremely interesting character, with reference to larvæ and adults, is a record of 50 egg masses of *Culex pipiens*, including the study of antecedents and progeny. The total number of eggs was 15,056, which, under various conditions, produced 7959 adults, of which 3984 were males and 3975 were females.

(To be continued)

A New Cantharis.

BY HENRY SKINNER.

Cantharis pilsbryi n. sp. —Black, shining, head with a red spot in the centre; sides of thorax red. Head convex and shining, with but few punctures, hind angles obtuse. Thorax nearly round, slightly convex, with few punctures. Elytra moderately robust, black, feebly shining. This species is of the same size as *deserticola*, and the elytra have practically the same character of reticulation. The red spot in the centre of the head and the red sides of the thorax distinguish it from the other species. Length 22 mm.

Described from five specimens taken by Prof. H. A. Pilsbry at High Bridge, Pecos River, Texas, April 27th.

A New Method of Preparing Wings and Other Parts of Insects For Study.

By W. V. TOWER, B. S., Amherst, Mass.

In ENTOMOLOGICAL NEWS for January, 1905, page 28, there appeared a note referring to some mounts of Lepidoptera prepared by Dr. P. P. Calvert to show the venation of the wings. For this purpose he used a ten per cent. solution of caustic potash as a bleaching agent, after which the wings were washed and then stained in a watery solution of Bordeaux red for twenty-four hours. Upon removal from the stain they were washed, floated onto cards and allowed to dry.

Several trials of this method failed to give satisfactory results, and, thinking there was a chance for improvement, a number of experiments were carried on at the Entomological Laboratory of the Massachusetts Agricultural College, which gave the following results :

METHODS.

1. Place the wings to be bleached in a crucible partly filled with hydrogen peroxide and cover ; boil until the scales are thoroughly bleached, then wash in water and then in seventy per cent. alcohol fifteen minutes in each. While the wings are washing smooth out with a fine camel's hair brush to loosen many of the scales and render the wings more transparent. After washing, stain from one to three hours with cyanin, gentian violet, Bordeaux red (six hours in this case) or rosaniline, then remove and wash for fifteen minutes in fifty per cent. alcohol and thirty minutes in water. At this point thorough washing is very important as air bubbles and more or less surplus stain have worked in between the two membranes of the wing. These can be removed by pressure with a camel's hair brush, gently forcing them out at the base of the wing. It is a good practice to repeat this washing ; then mount in glycerine jelly.

2. Balsam mounts. Bleach with hydrogen peroxid as above, then wash in water and in fifty per cent. alcohol, fifteen minutes in each ; remove and stain in cyanin for two hours, then wash in fifty, seventy and ninety per cent. alcohol, ten minutes in each, removing surplus stain and air bub-

bles, as explained above; then clear in oil of cloves and mount in xylol balsam.

The time required for treating wings by this method is the same as by the last, and the results are equally good.

3. Unstained mounts. Wings to be mounted without staining should be bleached with hydrogen peroxid as already described. After washing in water and removing the air bubbles, mount directly in glycerine jelly.

Wings treated by this method cannot be successfully photographed, whereas excellent photographs can be obtained from wings prepared by the first two methods.

Either of these methods require less time than that described by Dr. Calvert* or by the use of the Labarraque solution, and the venation resulting is more distinct.

Hydrogen peroxid of three per cent. strength is prepared by many wholesale drug houses, and various trade names are used for the product, but all of these preparations which were tried gave equally good results. As this substance when warm oxidizes metallic instruments it is advisable to use a wooden lifter in transferring the wings or other parts treated from one medium to another.

Although the stains already named have given the best results, the following have been tried: Cyanin, rosaniline, gentian violet, Bordeaux red, erythrosin, safranin, acid fuchsin, paracarmine, Grenacher's borax-carmine, Delafield's hæmatoxylin, Ehrlich's acid hæmatoxylin, Delafield's borax-carmine, methyl blue, orange G, analine hydrate chlorid and silver nitrate. Wings prepared and then stained with cyanin, rosaniline or gentian violet are excellent for immediate study, while those stained with Bordeaux red, erythrosin or safranin make good mounts from which to obtain photographs.

Hydrogen peroxid has also proved useful to bleach the antennæ, legs and mouth parts as well as the wings of Hymenoptera, and fuliginous wings of other insects are rendered much lighter by its use, while the tearing often caused by boiling such parts in potash seems to be avoided in this method of treatment. The bleaching proceeds faster after the peroxid has been boiled down somewhat, thus becoming more concentrated.

* [It should be noted that my method was devised for a special need for *dry* mounts.—P. P. CALVERT.]

A New Sawfly.

By T. D. A. COCKERELL.

A nematid sawfly has attracted attention by its appearance in the streets of Boulder this spring, being one of the earliest insects on the wing. As it does not agree with any described species, a description is offered :

***Pteronuss arapahonum* n. sp.**

♂.—Length about 7 mm.; anterior wing $6\frac{2}{3}$. In Marlatt's table (Revis. Nematinae, p. 44) it runs near to *P. ribesii* Scop., from which it differs in the coloration of the thorax above, the mesothoracic plates being solid black, the long third cubital cell, etc. Head and mesothorax shining black, the latter minutely but distinctly punctured; triangular mark between antennae, and broad anterior margin of clypeus (which is broadly but shallowly emarginate) reddish yellow; base of mandibles and labrum (which is quite large) dull whitish yellow; orbits dark, except a minute reddish spot at the top of the eyes; antennae reddish yellow beneath and black above, the colors sharply contrasting; joint 4 a little longer than 3; scutellum except a large spot at base, postscutellum, lobes of pronotum, and most of upper half of epimeron, reddish yellow; lower half and more of epimeron entirely black; legs light reddish yellow, the coxae, trochanters and bases of femora yellowish white; apex of hind tibiae, and their tarsi, blackened; wings hyaline (a little dusky), iridescent, the stigma (which is very large and broad) and nervures black; transverse costal nervure only slightly oblique and about half as far below basal as basal is before first cubital cell; third cubital cell much longer than its apical breadth; second r. n. almost as far from base of third cubital cell as the breadth of the base of latter; upper discal cell of hind wings surpassing lower at the point of junction; abdomen reddish yellow, the two basal segments more or less infuscated; apical part of sheath black; claws strongly bifid, the teeth parallel and about equal.

Var. a.—Middle of scutellum infuscated; light color on epimeron reduced to a transverse mark; third abdominal segment slightly infuscated in subdorsal region.

Var. b.—Transverse costal nervure only a short distance before basal.

Var. c.—Third cubital cell much higher, especially at base.

Hab.—Boulder, Colorado, April 6th (T. D. A. Cockerell); April 15th (W. P. Cockerell); April 10th (S. A. Rohwer).

THE REV. C. J. S. BETHUNE has been appointed professor of entomology at the Agricultural College at Guelph, Ontario, Canada, to which place all communications should be sent.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., JUNE, 1906.

Apart from the general loss of life and property brought about by the earthquake in San Francisco, entomologists have doubtless been especially interested in their brethren and co-workers in that unfortunate city and anxious to know how they fared. These questions are as well answered as may be at the present time by Dr. Van Dyke in another part of this issue. All did not fare alike. To the fortunate ones we send congratulations, and to the others our profound sympathy for what they have lost.

We would like to be of aid to those who have lost not only their collections and books, but property and employment. We therefore ask our subscribers to aid in helping those that suffered most. We will gladly receive subscriptions to be transmitted to entomologists, and will make a proper distribution of any money entrusted to us. The names of donors will be published in the NEWS, but not the amounts subscribed.

BULLETIN OF THE BRITISH COLUMBIA ENTOMOLOGICAL SOCIETY.—The first number of this quarterly has appeared. The formation of this Society and the publishing of its Bulletin show very commendable enterprise. The officers are as follows: President, G. W. Taylor; Vice-President, T. Wilson; Secretary, R. V. Harvey. There are at present 21 members.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

THE entomological laboratories and collections at Stanford University suffered practically no injury from the recent earthquake in California. The Stanford buildings, which were wrecked, were the arch, church and new museum, library and gymnasium, the latter two being in course of erection. The various quadrangle buildings, dormitories, etc., were only slightly injured. University work will begun again on August 23rd, the regular date for the opening of the next college year.—VERNON L. KELLOGG.

EARTHQUAKE AND FIRE NOTES FROM SAN FRANCISCO.—I have been collecting, as best I could, all information pertaining to the losses sustained by our local entomological fraternity, with a view to having it published in the ENT. NEWS.

From the Academy there were saved simply the boxes containing the types of the Coleoptera, Hemiptera and Hymenoptera. All else in our department was lost. The Behr collection of Lepidoptera, our general collection of insects, including all our types of Odonata, Arachnida, etc., and our entire library.

Of private collections, the greatest loss was that sustained by Mr. Chas. Fuchs, he having saved only about twenty-two boxes of specimens, these consisting of his generic collection of Coleoptera. All his books, I think, were burned. Mr. James Cottle lost his entire collection of Lepidoptera and all except one or two of his books. The Beverley Letcher collection of Lepidoptera and Coleoptera and the library, which was stored in Mr. Cottle's house, was also destroyed. I have heard that Mr. J. C. Huguenin lost his collection. That would leave the collection of Mr. F. X. Williams, which was in the unburned district, as the only good collection of Lepidoptera in the city. The owner is still away on our Galapagos Island Expedition, where he is, according to recent letters, doing splendid work. Dr. F. E. Blaisdell had one of his two cases of Coleoptera overturned by the earthquake. This of course resulted in the mangling of many of his specimens. All specimens of *Eleodes* loaned to him for purposes of study, were uninjured. The collection of Coccidæ belonging to Mr. E. M. Ehrhorn, was, so far as I could learn, unharmed. My own collection of Coleoptera was also unharmed. I simply lost all that was in my down-town office.

As a whole, our greatest loss will be our libraries, every big one in the city being burned. The Academy of Science simply saved its records, about one set of its own publications, and six other volumes. Our good friends among the scientific institutions of the country could therefore be of great assistance to us if they would reserve as complete a set of their publications as possible for us until the time when one will have a proper

place to deposit them and our finances in condition to begin purchasing them. For some time we will have to depend upon the libraries of our two universities.

This has been a tremendous blow to us all and rare is the person who has not lost something. First was the earthquake, which, though causing the loss of a great many lives and much destruction, would not have been greatly noticed. It was the fire that did the great damage, destroying all of the city, except a mere fringe of residences. Dr. Blaisdell and I were fortunately in this belt. The Academy was so much injured by the earthquake that it was only with the greatest difficulty that what few things were saved could be gotten out. Our Director, Mr. Loomis; our Botanist, Miss Eastwood; and our Librarian, Miss Hyde, did what they could.

The loss in valuables, such as books, pictures, bric-a-brac, records, etc., has been tremendous, for San Francisco was a wealthy city, and had many priceless things stored in both public and private places. Of historic places we saved but two, the Museum Dolores and the U. S. Mint. The Pioneer Hall, with its old records and historic relics is a ruin. Fortunately the H. H. Bancroft Library of Early California Records, a priceless library of its kind, now belonging to the University of California, was saved. All other libraries were burned; the Sutro with about two hundred thousand volumes, particularly rich in Shakesperiana and Fifteenth and Sixteenth Century books and manuscripts; the Public, the Mechanics-Mercantile, the Library of St. Ignatius College, where were stored many very valuable original manuscripts, all law libraries, and the library of our own Academy. In the latter, we calculate that we had about twenty-five thousand dollars' worth of books which cannot be duplicated.

There was, fortunately, a great deal of money stored in the Mint and in our banks, which will soon be available. This will enable our business people, who are working like trojans, to begin on the work of rebuilding, almost immediately. In a few years our city will be fairer and almost as extensive as ever. It will always be great to those who love it, and though it may secure many new valuables, will I fear never have again many of the things that some of us knew it possessed.

The conditions now are somewhat like those in a bristling frontier settlement. The streets in the unburned districts are crowded, signs are everywhere, big firms doing business from stores that were formerly small stock ones, from private residences, or from counters in vacant lots; troops patrolling all districts night and day, while all cooking has still to be done in the streets, all of our chimneys being injured to such an extent as to make it dangerous to make a fire indoors. Many are being taken care of by our outlying cities and towns, and many have gone to distant relatives or locations. There are, however, a sufficient number whose interests or whose love is too great to allow of their leaving the stricken city. The blow, while falling heavily upon the wealthy, will cause most suffering among the small clerks, and next among the pro-

fessional people. Many of the latter lost their all and have been obliged to leave town. The mechanics and laborers will have more work than they can attend to. In fact, many of the laborers are better cared for than they have ever been before. This is due to the generosity of our good friends throughout the world. It enabled the rest of us to get our breath. Now retail stores are open, and we can begin to live somewhat as we could before.

Dr. Blaisdell will, I think, be able to remain in town and to continue his work as before. Mr. Fuchs cannot expect any work for some time to come from the Academy, but fortunately has his craft to rely upon. He saved his tools and is already, so I am informed, hard at work. He is still cheerful. For the benefit of those who wish to communicate with the burned-out ones, I will give the addresses that I have procured: Mr. Charles Fuchs, 2322 Bank St., Alameda, Cal.; Dr. F. E. Blaisdell, 1800 O'Farrell St., San Francisco; Mr. James Cottle, 2117½ Bush St., San Francisco; California Academy of Sciences, 1806 Post St., San Francisco.

None of our entomologists were injured and all hopeful for the future. To all good friends and well-wishers, please give our most heartfelt thanks.—EDWIN C. VAN DYKE, 2112 Steiner St., San Francisco, Cal.

DR. DYAR'S SQUARE DEALING.—Readers of ENT. NEWS who have seen a copy of the remarkable paper reviewed in the May number (page 181) will no doubt be interested to learn something about the circumstances which preceded its preparation and hurried publication. As soon as Mr. Busck returned from his collecting trip to the West Indies last fall, and turned over to me the specimens of mosquitoes collected, I at once began separating the larvæ and larval skins into species, intending afterward to associate them with the bred adults and then definitely identify the various species; in this way both the larvæ and the adults would have been identified with reasonable certainty. Dr. H. G. Dyar, however, to whom had been promised the immature stages of the mosquitoes for writing up for the Carnegie monograph, began to clamor for these, demanding that they be turned over to him *at once*, and so persistent and vehement was he in his demands that an order was issued directing me to immediately place this material in his possession. I was further instructed to prepare a provisional list of the bred adults, which I did, marking with a query those species that I was not certain of, and Dyar was instructed to correct this list, indicating those cases, if there were any, where I had confused two species under one name, etc., but this he refused to do. Instead, he prepared and hurriedly published the paper referred to, giving my tentative names but without a word of explanation in regard to their being only provisional, although well aware of the fact that they were so. Moreover, in several cases he has omitted the mark of interrogation, while in others he has craftily transferred it from the name of the species to that of the genus, thus intentionally giving the false impression that it was the genus and not the species that I was in doubt about.—D. W. COQUILLETT.

A NEW ENTOMOLOGICAL SOCIETY.—The Hawaiian Entomological Society was formed December 15, 1904, and the first meeting held January 26, 1905. The present officers are: President, R. C. L. Perkins; Vice-President, G. W. Kirkaldy; Secretary-Treasurer, Jacob Kotinsky; Executive Committee, Otto H. Swezey and D. L. Van Dine; Editors of the Proceedings, G. W. Kirkaldy and Otto H. Swezey. Volume I of the Proceedings (for the year 1905) has been issued. It contains important and interesting articles, mostly relating to the local fauna. We wish the new Society great success and prosperity.

AS STEMMED *polyphemus* cocoons are in order, your readers may be interested in my experience. I have been collecting about seven winters in Worcester and Amherst, Mass., and in that time have found on the average about two attached cocoons each season. All these, except one, were on white birches (*alba*, weeping, *populifolia* and *papyracea*). That one was on a swamp maple. Of these all, except one on *B. populifolia*, were accidentally attached, but that one had a regular stem like a *promethea*, but very weak and short. This experience seems just the reverse of Dr. Kunze's, as not one attached cocoon was on oak, or overhanging a street. On the other hand I have found caterpillars as common on such trees as the others. A few weeks ago I found a *promethea* on some cultivated bush with sessile leaves, which was made without a stem, but attached directly.—WM. T. M. FORBES.

ALL the material for my book "The Butterflies of the West Coast" in the hands of the publishers, including finished books, plates, stereotype plates, etc., all is doubtless gone up in smoke, and nothing saved except a few copies in my hands here. I have not yet had positive information from them, but as they were in the centre of the burnt district I have no hope of anything having been saved. The stereotype plates being lost, the book will not be reprinted.—W. G. WRIGHT.

DR. McCook's health is so far restored as to permit him to resume pulpit and platform duty. He therefor announces that he will accept engagements for special lectures, singly or in courses, in theological seminaries, universities, colleges, academies, private schools, scientific clubs and literary associations.

A list of subjects is appended for selection. An early correspondence is invited, which may be addressed to Dr. Henry C. McCook, Devon, Pa.:

1. The Home and Habits of American Ants. A general view of ant life (illustrated);
2. Mound-making Ants of the Alleghenies (illustrated);
3. Agricultural and Harvesting Ants (illustrated);
4. The Honey Ants of the Garden-of-the-gods (illustrated);
5. Carpenter, Cutting and Slave-holding Ants (illustrated);
6. Maternal Industry and Baby-life of Spiders (illustrated);
7. Trap-door Spiders—their Architecture and Enemies (illustrated).

Doings of Societies.

The 18th regular quarterly meeting of the Pacific Coast Entomological Society was held on November 18, 1905, at the residence of E. M. Ehrhorn, 2524 Filbert Street, San Francisco. President Fuchs in the chair. Fifteen members were present.

Prof. J. J. Rivers reported the taking of *Eudamus proteus* at Santa Monica, California.

Prof. J. M. Aldrich gave an interesting talk on Diptera.

Mr. J. G. Grundel reported a trip to the Santa Lucia Mts., in San Luis Obispo Co. He found that the Catocalæ about willows varied greatly in color and selected spots resembling their coloration; he wondered whether they were conscious of their color.

Mr. Fuchs determined some Coleoptera taken by Mr. Grundel, namely: *Cychrus convergens* var., *Cicindela oregona*, and *Pterostichus castaneipes*. He exhibited some Sesiidæ bred from blackberry, peach and wild cherry, and a species of *Satyrus* from San Luis Obispo County, a *Hepialus* sp., and Catocalæ from Alma, Santa Clara County.

Miss Julia Wright a box of exotic Coleoptera from Ceylon.

Prof. J. M. Aldrich a *Calotarsa* n. sp. from near Palo Alto, California.

The 19th regular quarterly meeting of the Pacific Coast Entomological Society was held at the Café Odeon, February 17th, 1906, No. 8 O'Farrell Street, San Francisco. President Fuchs in the chair. Twelve members were present.

Prof. J. M. Aldrich gave an interesting talk on collecting and mounting Diptera. He advised the use of the black Klaeger pins, especially size No. 1, also No. 2 for the larger specimens, too large pins should not be used. The pin should be passed through the thorax at centre or to one side, according to the value of the median bristles in classification. The cyanide bottle should always be kept dry within, and specimens should be collected singly and closely watched at the time for the purpose of learning their habits.

Dr. E. C. Van Dyke read two papers that may be epitomized.

mized as follows: He first dealt with the genus *Leptura*, particular reference being made to the species found in North America. He spoke of the fact that this, a Palæarctic and Nearctic genus of about 175 species, was represented in this country by about 75 species, several being undescribed, or about three times the number found in Europe.

Two exceptions to the general northern distribution mentioned were the two species from the highlands of Central Mexico. Mention was then made of the distribution of various groups of these and the relationship that the various members bore to each other. A careful study of the species he said brought out many interesting facts, one being that the Rocky Mountains alone supported no well-marked species—*Leptura nigrolineata* being considered at most a very weak one, though they did harbor several rather interesting varieties. The Sierras, the humid coast belt of the Pacific and the Alleghanies, each claimed one or more very distinct species. The Doctor considered that *L. quadrillum* was closely related to *L. veratrix*, and that *cubitalis* was not a *Leptura* at all but an *Acmæops* and closely related to *basalis*.

Later on in the evening he went over the species, and with the aid of the specimens from his collection and a number loaned by Mr. Fuchs to make the series more complete, pointed out many peculiarities. Of 47 West Coast species known to him, all but three were shown.

In the second paper an effort was made to show wherein the fauna of the West Coast more closely resembled that of Europe and North Asia, than did that to the east of the Rocky Mts. Mention was made of the statement made many years ago by Prof. Asa Gray, that the flora of Eastern North America as a whole was more closely related to that of the Japano-Manchurian region than was that of the west coast.

The insect fauna of the same regions was also found to bear a similar relationship. The reason the Doctor gave for this, was that the parts of the flora and fauna, which bore this close relationship, were as a rule restricted to low levels, where there was both plenty of sun and moisture. In past geological ages there was at northern latitudes a great area of comparatively low land which made it possible for both these areas

to gain their species from the same source. The West Coast could not get this fauna, because at that period it was barricaded at the north by great highlands, or else densely forested and quite cool lowlands, districts which the more sun-loving species would not penetrate. The mountains and cool-loving species of the Eastern Continent would here, however, find a congenial home, and as much as the mountain systems of the two Continents there came in close touch with each other, it was a simple matter that there should result a settlement of both regions with a related fauna. This is what no doubt occurred and it is with regard to this fauna—the fauna of the mountains and the cool lowlands, that the West Coast is more closely related to the Palæarctic than is that of the eastern part of this country.

In order to bring out this point the more forcibly, he gave the distribution of all the known species of certain genera of the Silphidæ, the list including the following: *Necrophilus*, *Hadrame*, *Pelates*, *Pteroloma*, *Agyrtes*, *Sphærites* (one of the Nitidulidæ, according to Ganglbauer), *Lyrosoma*, *Pinodytes*, *Platycholeus*. Later on, a box containing all of the American species of this group with the exception of *Pinodytes hamiltoni* was shown, a new species of *Pteroloma* among the number.

Dr. F. E. Blaisdell stated that considerable time had been spent on the Gyrinidæ, and that they needed revision. He also stated that he had taken a large series of *Gyrinus parvus* at San Diego, California, a species heretofore not credited to the State, but from Texas.

Mr. F. W. Nunenmacher stated that he had for exhibition a box of *Hyperaspis* arranged according to Casey's classification. *H. 4-oculata* appears as the western form of *undulata*.

Mr. Chas. Fuchs read a paper on a trip to the Fort Tejon region.

Mr. Nunenmacher exhibited two new species of *Hyperaspis*, and a series of *H. dissoluta* Cr. as an extreme form of *undulata*.

Dr. Van Dyke the Lepturæ of the U. S. illustrating distributional areas.

Miss Julia Wright a box of exotic Coleoptera.

Dr. Blaisdell a box of Californian Gyrinidæ.

F. E. BLAISDELL, M.D., *Secretary*.

A meeting of the American Entomological Society was held April 26, 1906. Dr. Philip P. Calvert, President, in the chair. Thirteen persons present.

H. W. Wenzel donated a collection of blind Carabidæ from caves in Austria.

A letter was read from Dr. C. Brunner von Wattenwyl, acknowledging his election as a corresponding member.

Mr. Henry L. Viereck made a communication on the nests of wild digger-bees. Dr. McCook found about two hundred such nests on his place at Devon, and Mr. Viereck made casts of about a dozen of these. They ranged from eleven to twelve inches in depth, and were mostly straight, with a lateral at the end. A cast and entrance of nest were exhibited and the method of making the former explained.

Mr. Rehn exhibited some new or rare Orthoptera, among them a new and large Phasmid from Tonkin, and a new *Mantis* from the Huachuca Mts.

Mr. Ilg exhibited a specimen of *Biston ursarius* new to him and taken at Philadelphia.

Dr. Skinner exhibited a new *Acmaödera* from the Huachuca Mts., Arizona.

Mr. Rehn spoke of the collection of Orthoptera made by Prof. Snow at San Bernardino Ranch, Arizona, and the interesting species found. *Stagmomantis limbata* and *carolina* were mentioned and the differences in their anatomy pointed out.

Dr. Calvert exhibited a section of a grass-hopper in which a malpighian tube passed into the dorsal blood vessel or heart. He also said he had kept a lubber grass-hopper (*Dictyophorus reticulatis*) alive in captivity for four months and two weeks. Mr. Rehn said the species had been found as far north as South Carolina.

HENRY SKINNER, *Secretary*.

PROF. M. J. ELROD, in studying the Hesperidæ for his interesting work on the Butterflies of Montana (Bulletin No. 30, University of Montana), evidently used a revision based on male secondary sexual characters, as the figure called *Ochlodes sassacus* ♀ on page 156 is a Noctuid, *Melic-leptria sueta* Grote. No doubt the table he followed ran out quite naturally to this moth.—HENRY SKINNER.

Mr. Roland Hayward.

Mr. Roland Hayward died suddenly at his home on Brush Hill Road, in Milton, Mass., on April 11th. He was born March 7, 1865, and was the son of Isaac Davenport and Mary Bartlett (Vose) Hayward, and was born and died, as did his father before him, in the house on the estate that had been owned by his family for eight generations. He was a member of the Harvard Class of 1886, though ill health in his senior year prevented him from taking the examinations for his degree.

He was for fifteen years a member of the Boston Stock Exchange, and senior partner of the firm of Hayward & Townsend, bankers and brokers, but a few years ago retired from active business, as his health was never robust and he wished to devote himself to scientific pursuits.

He was an ardent entomologist and possessed a fine collection of Coleoptera and an excellent scientific library. He was a member of the Boston Society of Natural History, which he joined when a boy, and was treasurer of the Cambridge Entomological Club.

He was a lover of nature and delighted in long walks in the woods and pastures about his old home. He was a man of the strictest integrity, and generous and loyal to his friends. He was not married, and leaves one brother, Dr. George G. Hayward, and one sister, Mrs. Henry W. Cunningham.

Mr. Hayward was particularly interested in the Carabidæ, and did important work in that family. His studies of *Bembidium* and *Tachys* are well known. He was a careful and conscientious worker. An important work on the genus *Amara* was just finished before he died. His large collection has been bequeathed to the Museum of Comparative Zoology, at Harvard College. His library will go to the Public Library, in the town of Milton, Massachusetts.

WANTED.—Help in procuring Pennsylvania insects and data or data alone of correctly determined species of Pennsylvania insects of all kinds. I desire name and locality and notes on food, enemies, habits and haunts, if possible, for publishing in a full list of the insects of Pennsylvania.—Address H. A. SURFACE, Economic Zoologist, Harrisburg, Pa.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

SEPTEMBER, 1906.

No. 7.

CONTENTS:

Rowley—Hunting Catocalæ in daylight 231	Nason—Parasitic Hymenoptera of Algonquin, Illinois—V 249
Rehn—A new species of Eotettix (Acrididæ) from Georgia..... 234	Hancock—On the Orthopteran genus Ageneotettix, with a description of a new species from Illinois..... 251
Davis and Joutel—Observations on Cicada tibicen L. and allied forms... 237	Swenk—New bees of the genus Colletes 257
Cockerell—Preoccupied generic names of Coleoptera 240	Editorial..... 261
Mitchell—Notes on Tanypus dyari.... 244	Entomological Literature..... 262
Smith—Some new Larridæ from Neb. 246	Notes and News 263
	Doings of Societies 265

Hunting Catocalæ by Daylight.

By R. R. ROWLEY, Louisiana, Mo.

From the standpoint of a laborer, chasing Catocalæ through the tangled shrubs and vines of a valley, up the hillside, over logs and stumps, under a noonday sun of mid-July, protected only by the friendly shade of the dense foliage, is an exercise that the most energetic might not despise.

Divested of coat and vest, we had scarcely entered the little valley before we were dripping wet with perspiration.

Blinded by sweat and attacked by gnats and mosquitoes, the chase was anything but pleasant, and to add to our discomfort, swarms of bloodthirsty *Chrysops* pursued us relentlessly. These villainous little dipters, bolder than our other tormentors, feared neither the hand nor the hat, and desisted only in death.

Up the little dry run, beneath the naked roots of a venerable elm, we first came upon the quarry.

The net had been discarded, and with cyanide jar alone the shadowy nooks were closely scanned for the color-protected

prey. In a particularly dark corner, fast asleep, a handsome specimen of *Catocala cara* was trapped. His flutterings in the jar was of short duration and how our hearts beat a tattoo as we made him a prisoner. The beauty of his under wings was a balm for all our sufferings. A few specimens of *C. innubens* were taken at the same rendezvous, and we moved on up the valley, poking under overhanging banks and among the roots of trees half undermined.

Turning our course up the side of the hill we scrutinized the bark of trees for the black-hind-winged species and took *C. epione* and *C. resecta* on hickory. Other trees gave us the lordly *neogama*.

As the July days waned and August suns scorched the droughty hill sides, other species were added to the list; *palæogama*, *habilis* and *residua* on hickory and hidden away in the foliage of the Virginia creeper.

Amica was abundant on oak in early July, and *judith* sparingly on hickory, *residua* and *lucetta* scarce at all times. An occasional specimen of *piatrix* on walnut, and the gaudy *amatrinx* on bark of like color to his own upper wings.

The first *cara* did not furnish us greater delight than the first *vidua* that flew at our approach across a little ravine and folded his wings against the bark of a hickory sapling. His capture was comparatively easy, and such a choice fellow he was, "without spot or blemish."

Mr. E. Dodge slipped away to a particularly dense wood and took *lachrymosa*, but the writer never caught sight of that species, though he afterward tramped through its haunts again and again.

On the first day of September we were fortunate enough to take two fine specimens of *robinsoni* on butternut and hickory. These were the last of our catches as the weather was never favorable after that date.

Hidden in the cracks of the bark and the irregularities near the base of one grizzled old elm, at least a dozen specimens of *neogama* and *innubens* were routed out of their lurking places on several different occasions. The hollows of old stumps and often the loose bark of dead trees furnished many specimens of *innubens* and its variety *scintillans*.

Alone, one hot day in August, we were tramping along the south hillside, when a large moth flew from the very base of a hickory, straight down the hill toward the bottom. So yellow did he look at the first glance that we decided it must be an *io*. He was so suspicious of our actions that he would not allow a near approach, but a second glimpse convinced us that he was a *Catocala*, but we could not determine him specifically. To follow him was an easy matter, both because of his size and bright color when on the wing. We were so near him once that we had the top of the cyanide jar off and were about ready to make a final move when he was off again like an arrow.

After that, though we followed him to the head of the hollow, we were unable to get near him, and finally darting away with several *innubens*, he was lost altogether. It was the bitterest disappointment of the season, and even now it makes us sick at heart to think what a treasure was almost in our grasp only to slip away. If we had been nervous when we trapped a *cara* or a *vidua*, we had a real spell of "buck ager" when the great yellow moth led us the chase up the little valley. It was the most conspicuous *Catocola* we ever saw.

At one particularly dark spot beneath a half up-rooted tree base, on the bank of the little brook, we always found a fine *cara* awaiting us. Day after day we took a fresh one there. Once two were within three inches of each other, but the capture of one frightened away the other, so our faithful old tree could never promise us more than one a trip.

A single specimen of *C. uxor* was taken on an oak trunk by our companion, Mr. Ralph Rowley, on one August trip.

Anyone who has collected *Catocala* by daylight knows that the insect rests with its head down on the bark, the front wings entirely covering the treacherously colored hind ones.

With wings half erect, exposing the highly colored secondaries and head up instead of down when he is on the alert or frightened, the chances of placing the mouth of the cyanide bottle over the wary moth are few. Once thoroughly frightened a *Catocala* is hard to catch.

The tree trunks should be closely inspected before using a stick to dislodge any unobserved moths, as chases after fright-

ened specimens are often fruitless, besides rubbing the stick up and down the bark may strike the moth and ruin it for cabinet purposes. However, a "rousting" stick is indispensable, as the moths are sometimes out of the reach of the jar. Climbing may be resorted to in such cases where possible. Hot days are the best for *Catocala* hunting, but not necessarily sunshiny days.

It has been a puzzle to us to know just what elements of weather constitute a *Catocala* day. A sultry, sunshiny day was our first impression, but we sometimes found hot cloudy days just as good.

It is quite probable that after a night of rain the moths take refuge nearer the ground than at other times.

Often, unaccountably, there was a scarcity when we expected an abundance, and again when we expected little we reaped a real harvest, still on hot, bright days there were always moths to be found, high or low.

About dead stumps and old logs we never took other than *innubens* and *scintillans*, with an occasional *neogama*.

White-barked trees, like butternut and hickory, shelter the species with light colored upper wings, while the dark-barked trees furnish protection to the species with darker upper wings. As a matter of fact, each moth seeks the shelter that makes his color inconspicuous. So nearly are the bark and the closed upper wings of the moth alike in color that even a trained eye is often deceived, a most interesting case of protective coloration.

A new species of *Eotettix* (Acrididae) from Georgia.

By J. A. G. REHN.

On January 6, 1906, Mr. Morgan Hebard took a male individual of this genus at Tyty Plantation, south of Thomasville and immediately north of the Florida line, in Thomas County, Georgia. The specimen proved to represent a very distinct new species, which I take great pleasure in dedicating to Mr. Hebard.

Eotettix hebardi n. sp.

Type.—♂. Tyty Plantation, Thomas Co., Georgia, January 6, 1906. Hebard collection.

Allied to *E. signatus* Scudder, but differing in the narrower interspace between the eyes, the broad frontal costa, the absence of distinct lateral carinæ on the cephalic section of the prozona, the rounded caudal margin of the metazona, the



FIG. 1.—*Eotettix hebardi* n. sp. Lateral view of type. (x4.)

slightly broader interspace between the mesosternal lobes, the shorter and more rounded tegmina, the shorter furcula, the clavate cerci and less distinct tubercle of the subgenital plate, as well as some details of the coloration.



FIG. 2.—*Eotettix hebardi* n. sp. Dorsal view of apex of male abdomen. (x8.)

The form of the tegmina resembles *E. pusillus* Morse, but *hebardi* is separated from that species by the size and the form of the frontal costa. From *E. palustris* Morse the new form can be separated by the shape of the supranal plate and cerci and by numerous color characters.

The shape of the cerci, the rather thick blunt form of the prosternal spine and the lack of distinct lateral carinæ, as well as the broad frontal costa seen in this species are at variance with Scudder's generic description, but this probably requires modification as Scudder knew but one of the four species now credited to the genus.

Form slender, slightly compressed. Head with the occiput distinctly arched dorsad of the level of the pronotum; interocular space narrower than any portion of the frontal costa; fastigium distinctly but not strongly declivent, sulcate; face considerably retreating; frontal costa broad, slightly but regularly expanding ventrad, not sulcate; eyes large, moderately prominent when viewed dorsad, subovate in outline, the cephalic margin somewhat flattened, length about twice that of the infra-ocular sulcus; antennæ slightly longer than the head, pronotum and tegmina united, proximal joint narrower than the dorsal section of the frontal costa. Pronotum slightly tectate, the dorsum narrow, the greatest width contained nearly twice in the length; cephalic margin arcuato-truncate, with a very slight median emargination; metazona very closely and deeply punctate; median carina distinct but not high, lateral carina indicated only by a blunt angle on both the prozona and metazona, and a line of coarse punctures on the otherwise smooth prozona; principal tranverse sulcus distinct, cutting the median carina at a point distant from the caudal margin about two-fifths the pronotal length; lateral lobes very considerably longer than deep, the cephalic and caudal margins oblique, ventral margin obtuse-angulate. Tegmina about four-fifths the length of the pronotum, subovate, the greatest width about two-thirds the length, apical section rounded, subtruncate, veins moderately distinct and closely placed, the sutural margins of the tegmina separated by a space as wide as the frontal costa. Prosternal spine erect, slightly retrorse, thick, blunt. Interspace between the mesosternal lobes nearly twice as long as broad; metasternal lobes sub-attinent. Abdomen distinctly compressed, except caudad, the extremity being but slightly upturned. Furcula as long as the segment from which they arise, flattened, tips divergent. Supra-anal plate elongate-trigonal, deeply sulcate mesad, broadly and rather shallowly sulcate laterad. Cerci tapering in the proximal half, slender mesad, distinctly expanded distad, rounded dorsad, and with a rectangulate lobule ventrad, the distal half distinctly bent mesad, and falling slightly short of the tip of the supra-anal plate. Subgenital plate with the apical margin strongly curved, the apical tubercle thick, blunt and separated dorsad from the apical margin by a depression. Cephalic and median femora robust, inflated, the cephalic subfusiform. Caudal femora moderately slender; caudal tibiæ with fifteen spines on the external margins.

General color raw umber. Head with two widening patches of seal-brown on the occiput, postocular bars distinct and moderately wide, of shining black; eyes burnt umber. Pronotum touched with burnt umber dorsad; postocular bar present on the prozona, slightly broader than on the head and with the ventral border more undulate than the dorsad, shining black. Tegmina near Prout's brown. Abdomen with a broad bar of blackish on the lateral face, broken on most of the segments into a blackish suffusion or blackish spots on the caudal margins of the segment. Caudal femora touched with russet, the genicular arches and

the greater portion of the lobes on both faces blackish ; caudal tibiae very dull olive-yellow, marked with blackish proximad and the spines of the same color.

MEASUREMENTS :

Length of body	22. mm.
Length of pronotum	5. "
Length of tegmen	3.6 "
Length of caudal femur	12.5 "

Mr. Hebard has kindly furnished the following note on the capture of the type : "The specimen was taken in the long-leaf pine (*Pinus palustris*) woods on a very cold day. All other forms of insect life seemed absent, but I noticed this individual springing about in the jasmine and wire grass with great alacrity. It spite of the cold it appeared vigorous, and when released from my pocket in a warm room, sprang about rapidly, jumping several feet at each spring.

Observations on *Cicada tibicen* L. and allied forms.

By WM. T. DAVIS AND LOUIS H. JOUTEL.

Dr. Harris in his "Insects Injurious to Vegetation" describes *Cicada canicularis*, which he compares with *Cicada pruinosa* of Say. He also mentions in a foot-note *Cicada tibicen* of Linnaeus, which he states is even quite common within the limits of the City of New York. Prof. Uhler commenting on *canicularis* in another foot-note says : "this is nothing more than a local variety of *C. pruinosa* Say ; there is no persistency in the form and length of the abdominal valves, and the coloration and extent of pruinescence upon the insect depend upon various contingencies to which it is liable."

Mr. Chas. William Woodworth in his "Synopsis of North American Cicadidæ," published in *Psyche*, in June, 1888, follows the lead of Prof. Uhler, and under *Cicada tibicen* Linn., places as synonyms both *Cicada pruinosa* and *Cicada canicularis*. Most authors have, since Prof. Uhler's note, classed the three species mentioned by Dr. Harris as one, or at most have considered that *Cicada canicularis* might be entitled to specific rank.

To this view the authors of the present paper cannot subscribe, and after having examined about one hundred individuals of what Mr. Woodworth would call *tibicen*, we are strongly of the opinion that there are three species. We were first led to this view by observing the songs and distribution of the Cicadas about New York City, and later we found that the specimens could be easily separated into three series.

TABLE FOR SEPARATING THE MALES.

NAME	AVERAGE SIZE	VALVES, OR OPERCULA	LAST VENTRAL SEGMENT	COLOR, ETC.
<i>C. pruinosa</i>	31-33 mm.	Longer than broad. 8-10 mm. long	Nearly V-shaped	Thorax with few green or brownish marks. White spots at base of abdomen conspicuous. Abdomen light colored and pruinose beneath.
<i>C. tibicen</i>	30-32 mm.	As broad as long 5-6 mm. long	More U-shaped	Thorax with many green or brownish marks. White spots at base of abdomen rarely conspicuous; most often absent. Abdomen pruinose beneath on sides; central portion shining black.
<i>C. canicularis</i>	25-30 mm.	Broader than long 3-4 mm. long	More U-shaped	Markings similar to the last, with spots at base of abdomen rarely present; more pubescent than either <i>pruinosa</i> or <i>tibicen</i> .

The description of *Cicada tibicen* by Linnaeus would do equally well for the other two species considered below, but we have confined it to what, in our opinion, was the insect Dr. Harris had in mind from Manhattan Island, in New York City. In addition, there is no doubt as to the insect Dr. Harris described as *canicularis*, and the *pruinosa* of Say is nearly as well characterized.

What we have called the last ventral segment in the follow-

ing table is the gouge-shaped piece which terminated the abdomen of the male *Cicada* on the under side.

The females of *Cicada pruinosa* are, as a rule, larger than the other two species, and the colors are as given for the males. *Cicada tibicen* females have the many green or brownish markings on the thorax, and the abdomen beneath with the central portion shining black. *Cicada canicularis* is the smallest of the three, and the females, as well as the males, are more nearly covered with a fine pubescence, which is often quite conspicuous on the dorsal surface of the abdomen.

It will be observed from the characters mentioned, and much more markedly from a series of specimens, that *Cicada tibicen* and *Cicada canicularis* are more nearly related to each other than to *Cicada pruinosa*.

Cicada pruinosa is abundant on Staten Island, where its energetic song forms a conspicuous part of the insect melody of mid-summer. In the collection of New Jersey Cicadas examined by us through the courtesy of Prof. J. B. Smith and Mr. Edgar L. Dickerson, there are specimens from New Brunswick and the Orange Mountains.

Cicaden tibicen is not so common as the last species on Staten Island, but is more abundant on Manhattan Island, as at Mt. Morris Park for instance. It is also to be found on top of the Palisades at Fort Lee. Other localities are New Brunswick, Bayside and near Normanock in New Jersey. Its song is not so energetic or loud as that of *pruinosa*.

Cicada canicularis is more especially to be found on some of the sandy portions of Staten Island, and is otherwise widely distributed. We have seen specimens from Lakehurst, Sparta and Chester in New Jersey; from Sullivan Co., New York; Thousand Islands in the St. Lawrence River, and Lake St. Joseph, Quebec. Its song is quite different in tone from that of the other two species, and it may be told by it alone.

Mr. Cockroach.—"The doctor tells me that I have one foot in the grave."

Mr. Centipede.—"Oh, I wouldn't let a little thing like that worry me."

Preoccupied Generic names of Coleoptera.

BY T. D. A. COCKERELL.

In the course of my work on the list of Coleoptera of New Mexico, I have been struck by the number of preoccupied generic names which are still allowed to stand in our catalogues. It occurred to me that it would be a useful service to make a complete list of these, and to this end I have examined every name given as valid in Henshaw's list, with respect to homonymy. As a result, I find nearly fifty names which are absolute homonyms, and a large number which differ from earlier named only in some minor feature (*e. g.* termination indicating gender), and would be considered homonyms by many. These latter should not, I think, be disturbed. I have not examined the names of the numerous genera described in recent years, since the publication of Henshaw's catalogue. In my manuscript, I have provided substitute names for nearly all the homonyms, but only part of them are given here, as although I have made much search for available synonyms myself, and the list has been kindly looked over by Mr. Fall, there is still a probability that several available substitute names will be discovered in the older literature. It is hoped that those who are aware of such will record them.

CARABIDÆ.

1. *Diplochelia* Brullé, 1835 (*Diplochila* of our lists), is *Rembus*, Latr., 1817. The latter name was alleged to be preoccupied, but apparently in error; hence it should be used for our species.
2. *Diaphorus* Dej., 1831 (not Meig., 1824).
3. *Euproctus* Sol., 1851 (not Gené., 1840).
4. *Nothopus* Lec., 1852, is *Euryderus* Lec., 1848, not *Eurydera* Lap. I do not consider these names the same, and think that *Euryderus* should be restored.

HYDROPHILIDÆ.

5. *Helopeltis* Horn, 1873 (not Signoret, 1858) = *Helopeltina* n. n.; species *Helopeltina larvalis* (Horn).

SILPHIDÆ.

6. *Pelates* Horn, 1880 (not Fisch, not Cuvier) = *Pelatines* n. n.; species *Pelatines latus* (Mann.).
7. *Aglyptus* Lec., 1866 (not Foerst, 1856) = *Aglyptinus* n. n.; species *Aglyptinus laevis* (Lec.).

STAPHYLINIDÆ.

8. *Polystoma* Steph., 1835 (not Zed., 1800); *Emplenota* Casey, 1884, is available.
9. *Tanygnathus* Er., 1837 (not Wagl., 1832).
10. *Trigonophorus* Nordm., 1837 (not Hope, 1831, not Steph., 1829).
11. *Megalops* Er. (not Lacép., 1803).
12. *Ephelis* Fauvel, 1883 (not Lederer, 1863) = *Ephelinus* n. n.; species *Ephelinus guttatus* (Lec.), *E. pallidus* (Lec.), *E. notatus* (Lec.).

TRICHOPTERYGIDÆ.

13. *Trichopteryx* Kirby, 1826 (not Huebner, 1816).

COCCINELLIDÆ.

14. *Megilla* Mulsant, 1851 (not Fabr., for a genus of bees). *Parancæmia* Casey, 1899, includes our *M. vittigera*.
15. *Mysia* Mulsant, 1846 (not Gray, 1840, or Brown, 1827). *Neomysia* Casey, 1888 (not *Neomysis* Czern., 1887), is available.

ENDOMYCHIDÆ.

16. *Symbiotes* Redt., 1858 (not Gerl., 1857). *Eponomastus* Buysson, 1891, is available; species *Eponomastus ulkei* (Cr.), *E. minor* (Cr.).

COLYDIIDÆ.

17. *Eudesma* Lec., 1863 (not Ehr., 1838) = *Eudesmula* n. n.; species *Eudesmula undulata* (Melsh.).

CUCUJIDÆ.

18. *Ino* Lap., 1835 (not Leach, 1819, not Oken, 1815).

CRYPTOPHAGIDÆ.

19. *Tomarus* Lec., 1861 (not Erichs, 1847).

DERMESTIDÆ.

20. *Acolpus* Jayne (not Brandt, 1835).

DASCYLLIDÆ.

21. *Allopogon* Horn., 1880 (not Schiner, 1866) = *Allopogonia* n. n.; species *Allopogonia villosa* (Horn).
22. *Aræopus* Lec., 1874 (not Spinola). I have not the exact date of the Spinolian name, but it is certainly older. The beetle-genus may be *Aræopidius* n. n.; species *Aræopidius monachus* (Lec).

ELATERIDÆ.

23. *Tharops* Lap., 1835 (not Huebner, 1816).
24. *Cryptostoma* Latr., 1825 (not Blainv., 1818) = *Palæoxenus* Horn.
25. *Asaphes* Kirby, 1837 (not Walker, 1834) = *Hemicrepidius* Germ.

THROSCIDÆ.

26. *Drapetes* Redt., 1849 (not Meg., 1821). There is also *Drapetis* Meig., 1822.

LAMPYRIDÆ.

27. *Cœnia* Newman, 1838 (not Desv., 1830) = *Cœniella* n. n.; species *Cœniella dimidiata* (Fabr.), *C. amplicornis* (Lec.).

CLERIDÆ.

28. *Elasmocerus* Lec., 1849, is *Monophylla* Spin., 1841 (not *Monophyllus* Leach). If we accept the "one-letter rule" *Monophylla* should be restored.

PTINIDÆ.

29. *Theca* Muls., 1860 (not Sowerby, 1845). *Stagetus* Woll., 1861, is available; species *Stagetus profundus* (Lec.).

SCARABÆIDÆ.

30. *Bradycinetus* Horn., 1871 (not Sars, 1865) = *Bradycinetulus* n. n.; species *Bradycinetulus ferrugineus* (Beauv.), *B. fossator* (Hald.), *B. serratus* Lec.), *B. horni* (Rivers).

CERAMBYCIDÆ.

31. *Eustroma* Lec., 1873 (not Hubner) = *Eustromula* n. n.; species *Eustromula valida* (Lec.).
32. *Æthecerus* Chevr., 1862 (not Wesm., 1845).

CHRYSOMELIDÆ.

33. *Monachus* Chevr., 1834 (not Kaup, 1829).

TENEBRIONIDÆ.

34. *Cnemodus* Horn., 1870 (not Schaeff., 1850) = *Cnemodinus* n. n.; species *Cnemodinus testaceus* (Horn).
35. *Noserus* Lec., 1862 (not Foerst, 1862; not *Noserius* Pascoe, 1857.)
36. *Eupsophus* Horn., 1870 (not Fitzinger, date uncertain, but much earlier) = *Eupsophulus* n. n.; species *Eupsophulus castaneus* (Horn).
37. *Aphanotus* Lec., 1862 (not Lowe, doubtless earlier).

ÆGIALITIDÆ.

38. *Ægialites* Mann. (not Boie, 1822).

OTHNIIDÆ.

39. *Othnius* Lec., 1861, is *Elacatis* Pascoe, 1860. The latter was "pre-occupied" by *Elacate* Cuvier, and should I think be restored. The family, however, cannot be called Elacatidæ, because *Elacate* is the type of a family Elacatidæ, in fishes.

MELANDRYIDÆ.

40. *Carebara* Lec., 1862 (not Westw., 1841) = *Rushia* Forel, 1893; species *Rushia longula* (Lec.).

MELOIDÆ.

Zonoitoides Fairm., 1883 (not American) is a homonym of *Zonitoides* Lehm., 1862.

OTIORHYNCHIDÆ.

41. *Rhyppodes* Horn, 1876 (not Stal, 1874) = *Rhyppodillus* n. n.; species *Rhyppodillus dilatatus* (Horn), *R. brevicollis* (Horn).

CURCULIONIDÆ.

42. *Triglyphus* Lec., 1876 (not Loew, 1840) = *Triglyphulus* n. n.; species *Triglyphulus ater* (Lec.).
 43. *Macrops* Kirby, 1837 (not Burm., 1835, or Wagl., 1830) = *Hyperodes* Jek., 1864; species *Hyperodes vittaticollis* (Kirby), *H. humilis* (Gyll.), *H. hirtellus* (Dietz), *H. wickhami* (Dietz), *H. sparsus* (Say), etc.
 44. *Eudocimus* Schonh., 1836 (not Wagl., 1832).
 45. *Coelogaster* Schonh., 1837 (not Schrank, 1780). Two other homonyms are *Coelogaster* Ashmead, 1893, and *Coelogaster* Schulze, 1896.
 46. *Plocamus* Lec., 1876 (not Dejean, 1834).

CALANDRIDÆ.

47. *Himatium* Woll., 1873 (not Clark, 1860) = *Himatinum* n. n.; species *Himatinum errans* (Lec.), *H. conicum* (Lec.), *H. nigritulum* (Casey).
 48. *Wollastonia* Horn, 1872 (not Heer, 1852) = *Wollastoniella* n. n.; species *Wollastoniella quercicola* (Boh.).

ANTHRIBIDÆ.

49. *Ischnocerus* 1839 (not Grav., 1829).
 50. *Phænicobius* Lec., 1876 (not Morch, 1852) = *Phænicobiella* n. n.; species *Phænicobiella chamæropis* (Lec.).

It is greatly to be hoped that the "one-letter rule" will prevail; that is to say, that no name will be considered a homonym unless preoccupied by one spelled in exactly the same way. It necessarily goes with this, that the spelling of names must never be changed from the original, except in the case of a misprint. There are many names in our list of Coleoptera which have been so changed, and they should, I believe, all

be restored to the original form. To give some idea of the disaster that will result from the interpretation of homonymy which is prevalent in certain quarters,* I will cite some of the Coleopterous names which would fall.

<i>Agraphus</i> Schonh., 1834,	not <i>Agrapha</i> Hubn., 1816.
<i>Amblychelia</i> Say, 1834,	" <i>Amblychilus</i> Fisch., 1813.
<i>Amphicerus</i> Lec., 1861,	" <i>Amphiceras</i> Gray, 1847.
<i>Aphorista</i> Gohr., 1873,	" <i>Aphoristia</i> Kaup., 1858.
<i>Aplastus</i> Lec., 1859,	" <i>Aplasta</i> Hubn., 1816, or Schaum, 1844.
<i>Arhopalus</i> Serv., 1834,	" <i>Arhopala</i> Boisd., 1832.
<i>Asemum</i> Esch., 1830,	" <i>Asemus</i> Ranz., 1820.
<i>Atimia</i> Hald., 1847,	" <i>Atimus</i> Dejean.
<i>Chromatia</i> Lec., 1862,	" <i>Chromatium</i> Perty, 1852.
<i>Chrysophana</i> Lec., 1859,	" <i>Chrysophanus</i> Hubn., 1816.
<i>Coenonycha</i> Horn., 1876,	" <i>Coenonica</i> Kraatz, 1857.
<i>Colastus</i> Erichs., 1843,	" <i>Colastes</i> Hal., 1833.
<i>Conocetus</i> Horn,	" <i>Conoeca</i> Scott, 1865.
<i>Dromius</i> Bon., 1813,	" <i>Dromia</i> Fabr., 1798.
<i>Euphoria</i> Burm., 1842,	" <i>Euphorus</i> Nees, 1834.
<i>Polyphylla</i> Harr., 1841,	" <i>Polyphyllia</i> , 2 and 9, 1833.

In the case of the following, I do not know which has priority :

Morio Latr., 1810 (Coleop.) and *Morio* Month, 1810 (Mollusca).

Cyllene Newman, 1840 (Coleop.) and *Cyllene* Gray, 1840 (Mollusca).

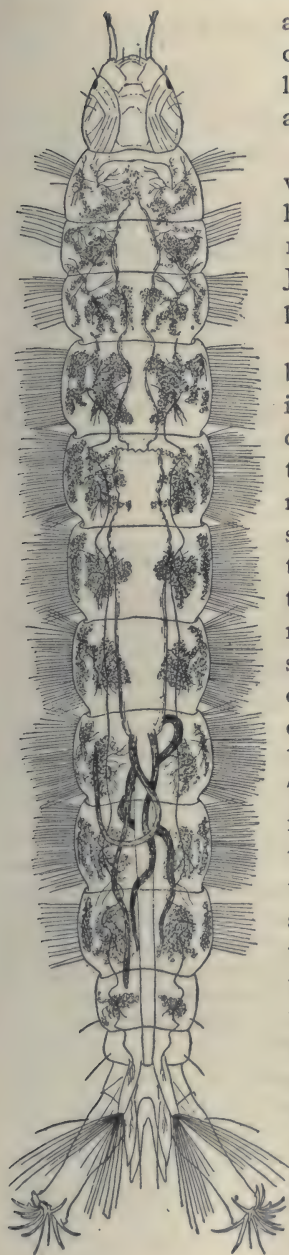
Notes on *Tanypus dyari*.

BY EVELYN GROESBEECK MITCHELL, Washington, D. C.

This species evidently winters in the larval stage. The earliest larvæ which I have found were taken on March 4th from a drinking tank for horses in Rock Creek Park, Washington, D. C. The tank consists of an iron pipe about three feet in diameter and four deep, into which falls a stream of clear spring water, continually running from a tap. The inside of the tap was overgrown with a green alga in which the larvæ hide and on which they also feed. The larvæ pupated the evening of March 4th, and the imagos emerged on the 6th. April 12th two batches of eggs were found at the tank.

The larvæ of this species are easily raised so long as there are algæ and euglena in the bottle and they are not in too light

* For a discussion of this matter, see Palmer, *Index Generum Mammalium*, pp. 34-37.



a place. Eggs laid June 15th by a captured adult hatched the 17th, the larvæ pupated the night of July 1st, and the imagos emerged on the 3rd.

If there is not enough food the larvæ are prone to eat each other. This happened in the case of eggs laid May 17th, which hatched the 20th, and by June 11th the larvæ had all disappeared.

On June 22nd larvæ were found to be abundant in a rain puddle situated in a back yard in this city. The puddle was about four feet in diameter, the water perfectly clear, with a soft, muddy bottom. The whole bottom seem alive with the moving heads of the larvæ, which were about thirty to the square inch. There were a few red larvæ of *Chironomus cristata* in the same pool. The *dyari* from the tank often construct "houses" in the form of tubes in the alga, fastening together bits of alga and excreta with silk. There evidently cannot be much silk for the tubes crumble easily, unlike those of many gnats. The larvæ in the puddle did not spin at all, they simply waved about on the surface of the soft mud until they made a hollow, which on deepening allowed the mud to silt in on their backs; or they shove head first into the mud, in either case making a slightly arcuate tube opening at the surface at both ends. In this tube they stay, head and thorax protruded, keeping up a constant waving motion. They almost never come out and swim about. The food in the

puddle could not have been algæ, it might have been bacteria or protozoa.

The larvæ (see fig.), are remarkably hairy, the first not so much so as the later stage. I think that they molt three times but am not sure, as they molt in their houses and eat their shed skins.

The adults emerge from the pupa case rather slowly as compared with some of the other gnats, which come out like a flash.

The eggs are in a slightly irregular, rounded mass of gelatin, with a thread of gelatin attached. The mass is about one-quarter inch in diameter. The eggs are about 200 in number and do not seem to have any regular arrangement in lines. They lie mostly with the small ends turned toward the centre of the mass, the outer ends being about one-quarter the distance from periphery to center of mass.

Some new Larridae from Nebraska.

By HARRY S. SMITH, Lincoln, Neb.

***Tachysphex punctulatus* n. sp.**

♀.—Length 7 mm.—Anterior margin of clypeus very slightly curved outward, a blunt, obtuse tooth at each side, which is scarcely noticeable; clypeus, excepting the margin, very strongly convex, and with a few large, widely separated punctures, shining; sides of face and front with medium sized shallow punctures, the spaces between them with exceedingly fine ones; vertex with punctures a little more widely separated; a narrow impunctate depression or line extending from middle ocellum to the two supra-antennal tubercles; depression behind ocelli deep, somewhat linear; space between eyes above at closest place about equal to antennal joints 2 and 3; second joint of flagellum about one-fifth longer than first, remaining joints gradually shorter; mandibles medially and spot on scape beneath, rufous; sides of face with silvery pubescence. Dorsulum finely punctured, depressed anteriorly, punctures becoming more sparse posteriorly; scutellum convex, sparsely and distinctly punctured, shining; postscutellum with punctures closer, metanotum finely granulated, metapleura minutely indistinctly striate; posterior face of metathorax with very fine striæ and a longitudinal balloon-shaped depression, point downward, over which a narrow transverse carina, on a level with the upper surface of the metanotum, projects. Legs black, apical joints of tarsi testaceous; comb of anterior tarsi with the bristles arranged in groups near the apices of the joints, one group for each joint, about 16 bristles altogether; tibiæ and tarsi spinose, middle ones most strongly so. Abdomen dark red, apical segments almost black, broadly margined with

testaceous; ventral segments finely punctured basally, with a few large punctures interspersed; pygidial area sparsely punctured, slightly concave and surrounded by a narrow raised margin. Wings smoky, outer edges and base lighter, iridescent; marginal cell truncate; second and third submarginal cells equal at top; third submarginal cell extending somewhat beyond marginal.

Described from one ♀ specimen, Sioux County, Neb., May.

Seems to be most nearly related to *T. tarsatus* Say, from which it is easily distinguished by the peculiar punctuation of the front, by its smaller size, and by the sculpture of the metathorax. In the punctuation of the anterior portion of the mesothorax this species approaches *T. semirufus* Cresson, from which it may readily be distinguished by its much darker wings and punctuation.

***Aucistromma sericifrons* n. sp.**

♂.—Length 6 mm.—Anterior margin of clypeus slightly emarginate medially, outer angles acute; clypeus rather finely punctured, shining; front coarse granulate, becoming gradually finer toward the lateral ocelli; vertex finely and closely punctured, the depression behind the ocelli quite strong; face clothed with a dense mat of short silvery-white pubescence; space between eyes at top slightly less than length of antennal joints 2 and 3 united; joints 1 and 2 of flagellum about equal; mandibles dark basally, rufous apically. Mesonotum finely punctured anteriorly, the punctures becoming coarser on the disk; scutellum and postscutellum coarsely punctured, entire mesonotum clothed with a thin yellowish white pubescence; upper face of metathorax comparatively very small, taking the shape of a shield, this face being strongly longitudinally striate, the striæ not curving outward as in *distincta*; a median longitudinal ridge which is broad basally and gradually narrowed posteriorly, separates the striæ; posterior face transversely striate, with a median depression, and clothed with a silvery pubescence, as are also the metapleura, which are minutely striate. Legs black, strongly spinose, the tarsi reddish. Abdomen bright red, apical segments black, each segment with a narrow band of punctures, these bands becoming wider on apical segments. Pygidial area coarsely punctured, ventral segments finely punctured, apical plate rounded. Wings hyaline, strongly iridescent; the 2nd recurrent nervure is received by the 2nd submarginal cell at the middle, the 1st is received close to the 1st cubital nervure; marginal cell truncate.

Described from one ♂ specimen, Glen, Sioux County, Neb., August 22, 1905.

This is a very distinct and remarkably pretty little species. In Fox's table it will run to *A. aurantia* Fox, from which it

may be readily separated by the sculpture of the metathorax, color and punctuation of the abdomen, wing venation and size.

Ancistromma bruneri n. sp.

♂.—Length 8-9 mm.—Anterior margin of clypeus strongly rounded out, the outer angles obtuse; clypeus with medium sized punctures, the distance between them variable; sides of face closely punctured, the front more sparsely so; vertex punctured as front; a shining space in the pit behind the ocelli; face with sparse silvery pubescence; mandibles apically and under side of style ferruginous; space between eyes at top greater than antennal joints 2 and 3, almost as great as 2-4 united; first and second joints of flagellum subequal. Thorax with very sparse pale pubescence, anterior portion of mesonotum finely punctured, depressed in front and with two distinct parapsidal grooves. scutellum medially impressed, shining, punctures a little more distant; postscutellum closely punctured; upper face of metathorax finely granulate, with a strong median furrow of uniform width running the entire length and connecting with the depression of the posterior face, which is also granulate, more coarsely so below; metapleura with medium sized punctures. Legs black, apical joints of tarsi reddish, feebly spinose, longer spur of posterior tibia two-thirds the length of basal joint of tarsus. Abdomen black, dorsal segments indistinctly punctured, excepting narrow apical margins of segments, which are impunctate and sometimes testaceous; pygidial area well defined, coarsely punctured; ventral segments distinctly finely punctured, apices of segments impunctate, 8th ventral plate rounded. Wings subhyaline, strongly iridescent, second recurrent nervure received before the middle of second submarginal cell; marginal cell truncate, appendiculation short.

Described from five ♂ specimens, West Point, Neb., June (L. Bruner).

Most closely related to *A. conferta* Fox, from which it differs in the comparative length of antennal joints, punctuation of front and vertex, sculpture of metanotum and color of abdomen. Dedicated to Prof. Lawrence Bruner, who collected the specimens.

THE REMAINS OF THOMAS SAY.—Under date of May 28, 1906, Mr. E. B. Williamson wrote: "Mr. C. C. Deam has just returned from New Harmony, Indiana, where he attended a meeting of the Indiana Academy of Sciences. You may be interested to know that Say's body is buried in a brick sepulcher or vault in the garden of Mr. John Corbin. Some time ago portions of the vault which were made of wood fell down, and in repairing the damage the opportunity was taken of examining the remains. The original coffins are gone, but the bones are well preserved in natural positions. The vault has been resealed with concrete to replace the timbers."

[A description and a picture of Say's tomb, by Prof. F. M. Webster, were published in the NEWS, vol. vi, p. 101, for April, 1895.—EDS.]

Parasitic Hymenoptera of Algonquin Illinois.—V.

BY WM. A. NASON, M.D.

The present paper concludes the series cataloguing the Parasitic Hymenoptera of Algonquin, Illinois. Altogether, there have been listed 608 species and 10 varieties, under 252 generic names. The following table shows the number of genera, species and varieties belonging to each family :

<i>Families.</i>	<i>Genera.</i>	<i>Species.</i>	<i>Varieties.</i>
Cynipidæ	18	29	
Evaniidæ	2	2	
Ichneumonidæ	82	271	10
Alysiidæ	11	15	
Braconidæ	55	156	
Chalcididæ	51	84	
Proctotrypidæ	30	47	
Mymaridæ	2	3	
Pelecinidæ	1	1	
	252	608	10

These parasitic forms of insect life are all dependent upon their hosts for maintainance and perpetuation, and this point of view opens up a most interesting subject of study. The hosts are largely vegetable feeders, and consequently the flora of the regions they inhabit must of necessity, to a great extent, be made up of the plants which furnish them suitable food. All plants and plant societies are dependent upon the existence of suitable soil, and climatic conditions for their growth and continuance. Hence, we must consider, in order to arrive at an intelligent idea of the origin and distribution of these parasitic forms, what are the ecological relations of the regions which control the vegetation necessary to perpetuate these hosts.

To do this it is best to first consider the geographical relations of these insect forms, and then the ecological conditions of the fauna and flora of the regions occupied by them. The first object may be first attained by consulting lists of species

which give definite localities where the species have been found to exist. The most available records in this line are to be found in the two following publications: "Catalogue of Described Hymenoptera of America North of Mexico," by E. T. Cresson, published in 1887, which gives the localities whence the species listed were originally described; "A Monograph of the North American Proctotrypidæ," by Wm. H. Ashmead, published in 1893, enumerates in like manner, with descriptions, the species of that family.

An examination of these two lists enables us to locate the geographic affinities of 371, or over 61 per cent. of the species embraced in the Algonquin list. They are distributed as follows:

LOCALITIES	Cynipidæ	Evaniidæ	Ichneumonidæ	Braconidæ	Chalcididæ	Proctotrypidæ	Pelicanidæ	Total, each locality
1. Canada	8	1	140	36	10	6		201
2. New Hampshire			1					1
3. Massachusetts	1			2	1			4
4. Connecticut	4		1	1	1			7
5. New York	2		2	2	2			8
6. New Jersey				2				2
7. Pennsylvania			5	4		1		10
8. Delaware			7					7
9. District of Columbia					1	10		11
10. Virginia			6		1	12		19
11. Florida	4				6	4		14
12. Texas			6	8	2			16
13. Ohio			1					1
14. Indiana	2	1	1	5				9
15. Illinois	2		14	7	7	2		32
16. Missouri			1	3	2	1		7
17. Iowa	1							1
18. Kansas						3		3
19. Nebraska	1							1
20. Colorado			3					3
21. California						5		5
22. British Columbia			1					1
23. Vancouver			2					2
24. Hudson Bay			1					1
25. United States						4	1	5
Total, each family	25	2	192	70	33	48	1	371

Now if we can find some factors which these regions, from which the species tabulated above are derived, have in common, it may be possible to reach some conclusions in regard to the influences which have made the fauna of northern Illinois what it is.

Mr. Edgar N. Transeau in a paper on "Forest Centres of Eastern America," published in the *American Naturalist*, vol. xxxix, p. 885, fig. 6, 1905, gives a map which is most suggestive in this connection. This map shows graphically the ratio of rainfall to evaporation in the eastern United States and Canada, expressed in percentages.

A very interesting fact is disclosed on comparing the distribution of the species of insects as enumerated in the table, with the distribution of rainfall and evaporation, given by Transeau in the map quoted above. For we find the species readily divide into two series, whose food plants pertain to regions of very different humidity, and consequently of different vegetal growth.

The first series embraces the species from Canadian sources, and all fall into zones in which the percentage of rainfall to evaporation is 110 per cent. or more. The second series embraces all the species described from regions east of the great western plains, and south of the Canadian sources, and fall into zones whose percentage of rainfall to evaporation ranges from 80 to 110 per cent.

In the first series from Canada and the north east are 201 species, which is 54 per cent. of the species given by Cresson and Ashmead, and 33 per cent. of all the Algonquin species. In the second series from regions east of the great plains and south of the Canadian region there are 153 species, or 41 per cent. of the species given by Cresson and Ashmead, and 25 per cent. of all in the Algonquin list. This leaves only 17 species, or less than 5 per cent. of the species given by Cresson and Ashmead from other areas.

Taken altogether, this gives 95 per cent. of the species assigned by Cresson and Ashmead to definite habitats, as originating in or inhabiting the two zones or areas described. This is a sufficiently large percentage to warrant conclusions of

some value, for it embraces 58 per cent. of all the Algonquin species.

These are exceedingly interesting facts, and although the data are far from complete, it is evident that they point decisively toward the solution of the problem of the origin of the Algonquin insect fauna we are considering. For the Canadian series come from what Transeau describes (pp. 884, 885), as the "northeastern conifer forest centre," with a ratio of 110 or more percentage of humidity, and the second series from the regions he describes as "open forests," "oak openings," "dense forests on low grounds" and the "decidious forest centre" having a ratio of less than 110 per cent. of rainfall to evaporation.

The situation of Algonquin in northern Illinois, as situated on the map given by Transeau, confirms the ideas stated above. For the locality is near the northern edge of the "decidious forest centre," and also near the southern edge of the "northeastern conifer forest" in Wisconsin. This statement is emphasized by the fact that a genuine cedar swamp exists ten miles south of Algonquin, near Elgin, which is as characteristic as are the cedar swamps of northern Michigan or Wisconsin.

The views of Transeau, as given above, confirm the ideas earlier advanced by Mr. Chas. C. Adams, in a very interesting and valuable paper, "On Post Glacial Dispersal of the North American Biota," published in the Biological Bulletin in 1905; a map on page 57 of that paper very clearly shows how his second biotic type from the north, and the fourth biotic type from the south of the Ohio River, on the retreat of the Wisconsin glacial ice sheet, would naturally meet in the region of northern Illinois, and establish a fauna and flora, having many characters in common with those of the northeast and southeast. The boreal and austral types would mingle and find in northern Illinois a common ground, and the fauna and flora would necessarily show evidences of this double derivation.

It is to be hoped that sufficient data will be accumulated in a few years to enable the conclusions arrived at in this paper to be thoroughly investigated. A list of the hosts of the Algonquin parasitic insects given in this series of papers, and of the food plants of these hosts, would enable us to clear up some of the points at issue. This, and the analysis of many

local lists of both insects and plants, would be steps in the right direction. For this study involves such a variety of elements which go to determine the ecological relations of the plant and insect life—the fauna and flora—of the regions we are considering, that much time and study will be necessary. But the results will be commensurate with the labor, for they will not only add greatly to our knowledge, but also clear up some of the most interesting of the unsettled problems of biology.

On the Orthopteran Genus *Ageneotettix*, with a description of a new species from Illinois.

BY DR. J. L. HANCOCK, F.E.S.

A study of a series of specimens of the genus *Ageneotettix* from Illinois has given rise to the question whether there has not been discrepancies, by authors, in the identity of the described species of this genus. This refers especially to the species found in the region about Chicago, which is evidently undescribed, or more properly has been mistaken for another species. But before further discussing this phase of the subject it may be well first to give a brief resumé of the literature. In 1898, Dr. S. H. Scudder* published "A Preliminary Classification of the Tryxalinæ of the United States," wherein is noted the following definition of the genus *Ageneotettix*: "Pronotum not constricted in the middle, the prozona slightly the longer, lateral carinæ obsolete on the prozona." Scudder† again describes the genus as follows: "Generally smaller forms. Median carina of prozona not cut by the transverse sulci, foveolæ of male subequal, rhomboidal; hind tibiæ red, lower apical spur of inner side of same fully half as long again as upper spur."

McNeill‡ first proposed the present accepted name *Ageneotettix*, substituting this name for *Eremnus* which was preoccupied. In his key to the genera of *Tryxalinæ*|| we find his genus distinguished as follows: "Median carina of the pronotum cut behind the middle of the pronotum. Vertex of the head destitute of a median carina. Posterior margin of the metazone very obtusely angulate." According to this author,

* *Psyche*, viii, No. 267, p. 231.

† Guide to the Genera and Classification of the North American Orthoptera, p. 31, 1897.

‡ *Psyche*, viii, p. 71.

|| Revision of the Truxalinæ of North America, Proc. Daven. Acad. Nat. Sci., vi, 1897.

there are two species of *Ageneotettix*, namely: *deorum* Scudder, and *scudderi* Bruner. But McNeill further states in his Revision, p. 269, that it is quite probable that the former species is identical with the latter, implying thereby that *scudderi* is the only representative valid species. In another place he mentions also under *E. scudderi* Bruner, that "One variety of this species has the vertex usually broad between the eyes, with the anterior margins bounded by carinae, which meet at an angle much greater than a right angle even in the male." This variety, McNeill adds, was received from Prof. Gillette under the name of *Aulocara scudderi* Bruner, and another form with narrower vertex under the appellation *Dociostaurus coloradensis*. "Both forms being named by comparison with specimens determined by Prof. Bruner."

The present status of the described species according to Scudder's Alphabetical Index to North American Orthoptera is that the two species *deorum* and *scudderi* are the only ones retained. Scudder and Cockerell* noted both species as occurring in New Mexico, a third species which was not described is also mentioned by them.

As intimated in the beginning of this paper my present contention is that still another species occurs in Illinois. Its identity becoming evident after study of a series of specimens from Chicago. The confirmation of this species was made possible by comparison with a type specimen of *scudderi* which Prof. Bruner kindly presented to me. The difference between *scudderi* and the Illinois form, which for convenience is called *arenosus*, is very marked, yet this latter species has probably been confused by Lugger and Blatchley as *scudderi*. Both of these writers described and figured it under the latter name in each of their State catalogues of Orthoptera. Moreover, McNeill probably also refers to it in part, in his Revision under *scudderi*, as occurring in a few localities near Moline, Illinois. Though the description given by Blatchley† under *A. scudderi* fits *arenosus* quite accurately, I have drawn up the following comparisons of the two species side by side, that they may be readily recognized:

* A first list of the Orthoptera of New Mexico, Proc. Daven. Acad. Sci., ix, p. 27, 1902.

† Orthoptera of Indiana, p. 248, 1902.

scudder Bruner.

♀ type specimen from Lincoln, Nebraska.

Body of moderate size.

Vertex distinctly produced, the anterior carinæ meeting at an angle slightly less than a right angle, the foveolæ but lightly impressed.

Pronotum with the posterior border distinctly obtuse angulate.

Tegmina nearly reaching to the tips of the knees of hind femora.

Hind femora incrassate.

Color grayish, tegmina marked by more or less numerous subquadrate dark spots, hind femora marked by three obscure blackish bands, the middle one more evident than the rest, the knees outwardly blackish, variegated with gray, deeper black on the inside; tibiæ coral red, with whitish annula at the base; under surface of the body yellowish white.

Measurements: length of body, female, 22 mm.; pronot.; 3.9 mm.; tegmina, 14 mm.; post. femora, 12.5 mm.

arenosus sp. nov.

Type from Chicago, Illinois.

Body small, rather slender.

Vertex very little produced, the prominent carinæ formed anteriorly into a distinct right angle, enclosing a deep crescentic impression, the foveolæ deeply impressed.

Pronotum with the posterior border convexo-subangulate.

Tegmina not reaching to the knees of the hind femora.*

Hind femora slender.

Color dull brownish or purplish-brown, the tegmina marked by numerous, small, dark, quadrate spots. Very frequently a median light testaceous band extends from the vertex backwards on the middle of the head, pronotum and the tegmina to the tips; this band slightly darker forwards on the head and pronotum, here enclosed on either side by a black line which widens into triangular spots at the distal half of pronotal disk; hind femora marked by three obscure blackish bands, the posterior one broader and more evident, the knees deep black; tibiæ coral red, with a whitish basal annulus, rarely immediately followed by a second dusky anulus or minute pigmented spots; ventral surface of the body light or darker yellowish brown.

Measurements: length of body, female, 19.5-20 mm.; pronot., 2.9 mm.; tegmina, 11 mm.; post. femora, 11.5 mm. Male measured to end of tegmina, 15 mm.; pronotum, 2.7 mm.; tegmina, 9-9.5 mm.; post. femora, 10.5 mm.

* The figure of *scudder* Bruner, given by Lugger, and later copied by Blatchley appears to be the long-wing form of *arenosus*.

Habits.—This small locust seems to be quite local in distribution, having been taken only at Cheltenham (Chicago). Here I found the entire series of eighteen specimens, living within an area of twenty yards, on light sandy ground, sixty yards from the lake shore. All the mature specimens were found during July and August. In the afternoon of August 26, 1901, a number of this species were discovered at the point above mentioned secreted on the ground among the accumulated remains of dried twigs and leaves, fallen from the weeds. Individuals with the light dorsal stripes were especially well protected against this background. Out of six specimens taken on the above date, one was a dull brown, without the median stripe. In fact, the striped form of coloring is the prevailing one. When an attempt was made to capture these shy little insects with the unaided hand, they jumped energetically, using their wings rather sparingly in their attempts to escape.

SPRAY, O, SPRAY.

(E. G. Packard in Fruitman's Guide.)

Spray, farmers, spray with care,
Spray the apple, peach and pear ;
Spray for scab, and spray for blight,
Spray, O spray, and do it right.

Spray the scale that's hiding there,
Give the insects all a share ;
Let your fruit be smooth and bright,
Spray, O spray, and do it right.

Spray your grapes, spray them well,
Make first class what you've to sell,
The very best is none too good,
You can have it, if you would.

Spray your roses, for the slug,
Spray the fat potato bug ;
Spray your cantaloupes, spray them thin,
You must fight if you would win.

Spray for blight, and spray for rot,
Take good care of what you've got ;
Spray farmers, spray with care,
Spray, O spray the buglets there.

New Bees of the genus *Colletes*.

BY M. H. SWENK, Dept. Ent., Univ. of Neb.

***Colletes hesperius* n. sp.**

♀. Length 14 mm.—Agrees with *C. compactus*, to which it is closely allied, except as follows: Pubescence much paler and more abundant, the hairs of the *face*, *vertex* and *occiput* all pale, or at most a few brownish hairs on sides of vertex, the pubescence of thoracic dorsum pale dull gray, with the black hairs comparatively few, sparse on the disk and forming a rather thin scutellar fringe; malar space nearly one-third as long as broad; joint 3 of antennæ a shade longer; first abdominal segment uniformly very finely, closely and weakly punctured (as different as possible from the heavy, close double-sized punctuation of *compactus*), the second segment minutely and indistinctly punctured; abdominal fasciæ much broader and denser.

♂. Length 11 mm.—Sculptured much like *compactus* ♂, but easily distinguished by having the pubescence entirely grayish white, a very few pale brownish hairs on scutellum, but no black ones anywhere, the abdominal fasciæ much broader.

Described from a ♀ and a ♂ type, both taken by Mr. C. V. Piper at Almota, Whitman County, in western Washington State. Types in author's collection.

***Colletes crawfordi* n. sp.**

♀. Length 8 mm.—Like *C. intermixtus*, but smaller and less robust; pubescence paler, that on *vertex* without any dark hairs whatever, that of thorax nearly all pale, the dark hairs confined to a few, scattered ones on disk and the usual scutellar fringe; supraclypeal area dullish, more punctured; mesothorax similarly but much more coarsely punctured; those on mesopleura shallower and more irregular; scutellum with only a narrow basal impunctate line; areas surrounding enclosure less coarsely punctured; first abdominal segment finely, closely and distinctly but not deeply punctured (subimpunctate in *intermixtus*), following segments finely, indistinctly punctured; basal segment with short, sparse hair, the venter densely fringed as in *texanus*; outer spur of hind tibia distinctly pectinate with about a dozen long teeth; antennal joint 3 decidedly exceeding 4; legs with black hair as in *intermixtus*, but also on upper surface of posterior tibiæ; the basal tarsal joint fully three times as long as broad.

Described from a single female specimen taken at Dallas, Texas, October 8, 1905, on *Physalis*. This species is close to *C. latitarsis* Rob., which also visits *Physalis*, but differs in the sparsely punctured clypeus, slender hind metatarsi and other minor characters. From *C. intermixtus* Swenk it differs as

above, and moreover flies in the fall while *intermixtus* is a vernal species. I dedicate this species to Mr. J. C. Crawford, from whom the type was received, in recognition of his most meritorious work on our bees. Type in author's collection.

***Colletes lacustris* n. sp.**

♀. Length 9 mm.—Clypeus shining, long and prominent, *flattened but not sulcate*, its punctures coarse but widely separated and *not at all striate*, the subapical transverse depression very deep. Supraclypeal area shining, coarsely punctured. Face roughened by excessively small cancellate punctures, dull, its pubescence short, sparse and pale. Sides of vertex densely, finely, indistinctly punctured, the interocellar tuft and occipital fringe sparse, black, with some pale hairs intermixed. Cheeks with sparse, shallow punctures and short, thin, white hair. Antennæ short, black, *joint 3 longer than 4*, flagellar joints about as long as wide. Malar space *about as long as wide*. Prothoracic spine very short, blunt. Punctures of mesothorax fairly large, rounded and distinct, very close along anterior margin, medially and posteriorly widely separated and less distinct on a shining surface, this shading further into a large polished impunctate spot on the disk. Mesopleura with distinct well separated punctures. Scutellum with a wide basal polished impunctate space followed by a densely, striately, shallowly punctured surface. Postscutellum minutely roughened, opaque. Superior face of metathorax poorly defined, its pits rather irregular, longer than broad. Enclosure funnel shaped, the bowl coarsely irregularly rugose, the neck concave, smooth and somewhat shining. Sides of posterior face subopaque, densely shallowly rugose, tuberculate. Tegulæ large, shining black. Wings *clouded* by a moderate infuscation, nervures and stigma black. Thoracic dorsum with sparse, erect, *black* pubescence densest on scutellum and thinnest on disk where pale hairs are intermixed. Postscutellum, metathorax, pleura and below with thin grayish white pubescence. Legs moderately stout, black, their pubescence pale and thin. Anterior coxæ with very short inconspicuous blunt spines. Tibial spurs dark testaceous, not pectinate. Claws rufous, deeply medially toothed. Abdomen stout, sub-oval, *almost bare*, very polished, *two basal segments practically impunctate*, following segments very minutely and indistinctly punctured. Apical margins of segments not at all depressed, the fasciæ on 2-5 reduced to mere fringes, easily worn off. The extreme lateral base of segment 1 has some sparse white hair, and the disks of segments 3-6 have scattered, short fuscous hairs.

♂. Length 8 mm.—Differs from the ♀: Pubescence of vertex and thoracic dorsum largely pale, well mixed with black on scutellum; clypeus basally finely, closely punctured, apically polished and impunctate; antennæ black, the flagellum brown beneath, joint 3 nearly equals 4, taken with 2 much longer than 4, following joints one and one-half times as long as broad, malar space a shade longer than broad; punctures of

mesopleura sparse, shallow and indistinct; basal two segments scatteringly, feebly punctured, 2-5 with more decided apical fringes, the segments abundantly provided with long, erect, pale hairs.

Described from 1 ♀ and 8 ♂ co-types, taken by Mr. Morgan Hebard in northern Michigan (Baraga County), along the shores of Lake Superior, as follows: Baraga County, "barrens near marsh," July 18, 1903, 1 ♀; July 20, 2 ♂. Pequaming, "in meadow," July 2, 1 ♂; July 15, 2 ♂. Point Abbaye, "in huckleberry barrens," July 10, 1 ♂; July 24, 1 ♂. Apparently the species flies principally during July.

***Colletes pleuralis* n. sp.**

♀. Length 9 mm.—Very close to *C. californicus*, but differing as follows: Hind tarsi more slender, the basal joint three times as long as wide, the inner surface with the hairs mostly pale brownish instead of all black; basal abdominal segment with long, sparse, pale hair, 2 and 3 with shorter pale hairs; first recurrent nervure entering second submarginal cell basad of middle as in *californicus*, but third submarginal less narrowed above so that its upper length is more than twice as long as that part of the lower length distad of the junction with the second recurrent nervure; malar space slightly longer, about one-third as long as broad; entire bowl of enclosure transversely ridged, the surrounding sides opaque, minutely reticulated; vertex subuniformly more coarsely punctured.

♂. Length 8 mm.—Much like *californicus* ♂, but easily distinguished by having the pubescence of abdomen wholly or mostly pale, forming apical fringes to the segments, much as in *pascoensis*, the black hairs being much reduced, very different from the uniform jet-black abdominal pubescence of *californicus*; malar space decidedly longer, about one-half as long as broad.

Described from a pair collected in Gallatin County Montana (6,800 feet), June 27, 1900, by Prof. Cooley. I have also two males collected in the same county at an elevation of 8000 ft., July 22, 1900, by Mr. E. Koch. Types in author's collection.

***Colletes birkmanni* n. sp.**

♀. Length 11 mm.—Stoutly built. Clypeus coarsely striate-punctate, depressed before the transverse apex, supraclypeal area sparsely punctured. Malar space one-fourth as long as broad. Vertex with a few scattered coarse punctures, otherwise shining, subimpunctate. Cheeks finely closely punctured. Antennæ black, joint 3 equals 4. Face with distinct deep close punctures, its pubescence short, rather sparse, silvery, intercellular tuft and occipital hairs tinged with yellowish. Pubescence of thoracic dorsum pale ochraceous, very slightly fulvescent, that on metathorax,

pleura and below pure white. Prothoracic spine *large, long, sharp and rather conspicuous*. Punctures of mesothorax coarse, round and deep, crowded anteriorly, more separated posteriorly, on a large disk few or none. Punctures of scutellum like those on anterior mesothorax only slightly coarser, anteriorly a shining less punctured line, postscutellum rough. Superior face unusually well defined on metathorax, the pits very regular, polished, longer than broad. Enclosure subtriangular, the neck and lateral extensions of the bowl about equal, the whole very smooth and polished. Surrounding sides shining, feebly punctured and with broken feeble reticulations. Mesopleura punctured like anterior mesothorax. Tegulae dark testaceous. Wings perfectly clear, nervures and stigma blackish brown. Anterior coxae with very short, rudimentary spines. Outer tibial spur not pectinate. Claw rufous, medially toothed. Pubescence of legs white, except for golden inner tarsal apical tufts. Abdomen elongate-conical, segment 1 polished, with a very few scattered very feeble punctures, segment 2 also polished, sparsely indistinctly punctured, following segments duller, with coarse but indistinct close punctures. Basal segment with long white hair at sides, its apex with a widely interrupted loose white fascia *connecting with a broad fascia on base of 2*, which with 3-5 is provided with broad, white, apical fasciae, their disks with longer white bristles. Margins of segments not depressed.

♂. Length 10 mm.—Differs from the ♀ as follows: Form very slender; clypeus less striately punctured, covered with dense white hair; pubescence of thoracic dorsum dull yellowish gray paling to white on sides and below; malar space two-thirds as long as broad; antennal joint 3 shorter than 4, taken with 2 subequal to 4, flagellar joints over twice as long as broad; punctures of mesothorax much much separate; those on mesopleura coarse and crowded; abdomen longer and narrower, basal and following segments more distinctly punctured, more hairy, apices of segments 1-5 distinctly depressed and fasciate, apex with fine brownish red hairs; claws subapically cleft.

This species is described from a ♂ and a ♀ type taken April 5, 1904, at Fedor, Texas, by Rev. G. Birkman, to whom, in recognition of his extensive collecting in that locality, I have dedicated it. I have also four ♀ paratypes taken May 5, 1901, May 7, 1901, May 1, 1898, and November 10, 1897, thus showing the species to be double brooded in that region as is also *C. americanus*, though the spring brood, flying in April and May is evidently the principal one. I have also a ♀ paratype (No. 308) from Hamilton County, Kansas, 3,500 feet, collected by Prof. F. H. Snow. The species seems to come nearest to the *thoracicus* group, but has several characteristics of *C. americanus*. Types in author's collection.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., SEPTEMBER, 1906.

Many types were destroyed by the earthquake in San Francisco, including Dr. Behr's types of Lepidoptera. This suggests the great advantage to be derived from the wide distribution of cotypes or paratypes in various institutions, as it is not likely that all will be destroyed at one fell swoop if they are widely distributed. It is fortunate that typical examples of Dr. Behr's species are in the Strecker collection. In In Strecker's Lep. Rhop. and Het., suppl. 3, a list of Behr's types in the Strecker collection is given. While they are called types they should probably be called metatypes according to more modern views. It is likely that typical examples of Dr. Behr's species are also in the W. H. Edward's collection now in the Carnegie Museum in Pittsburgh. Accurate figures of the types of American butterflies described by Dr. Boisduval would be very valuable, and it is to be hoped that some day American Lepidopterists will supply the funds necessary for the purpose. Modern building construction will do away with the danger of fire, but it is questionable whether buildings will ever be made earthquake proof. We suggest to all authors of new species that they supply our large institutions with cotypes or paratypes, or at least with metatypes so as to prevent entire destruction and lessen the distance to be traversed by those wishing to study type material.

Entomological Literature.

ENTOMOLOGY WITH SPECIAL REFERENCE TO ITS BIOLOGICAL AND ECONOMIC ASPECTS.—By Justus Watson Folsom, Sc. D. (Harvard), Instructor in Entomology at the University of Illinois. With five plates (one colored) and 300 text-figures. Philadelphia: P. Blakiston's Son & Co., 1012 Walnut Street. 1906. Octavo. Cloth, \$3.00 net. Pp. vii, 485.

The preface states: "This book gives a comprehensive and concise account of insects. Though planned primarily for the student, it is intended also for the general reader. The book was written in an effort to meet the growing demand for a biological treatment of entomology. The existence of several excellent works on the classification of insects (notably Comstock's Manual, Kellogg's American Insects and Sharp's Insects) has enabled the author to omit the multitudinous details of classification and to introduce much material that has hitherto not appeared in text books."

It may be added that this work is also utterly different from Packard's Text Book of Entomology; perhaps it most resembles Carpenter's Insects, Their Structure and Life, among recent books in this field, but it devotes still less space to taxonomy, for Carpenter gives us the characters of all the principal *families* of insects while Dr. Folsom descends to no lower category than that of the suborders.

The effort to meet the demand for a biological treatment is shown by the list of chapters and their relative length. Chapters I. Classification, 26 pp., II. Anatomy and Physiology, 119 pp., and III. Development, 38 pp., form about 44% of the reading matter of the volume. The remaining Chapters, IV–XIII, are ecological and are the more interesting, partly by virtue of the merit claimed for them in that their matter, in large part, has not hitherto appeared in text books. Their titles are worth quoting to give the reader an idea of their nature: IV. Adaptations of Aquatic Insects; V. Color and Coloration (based largely on the works of Mayer, Tower, Edwards, Pictet and Poulton); VI. Adaptive Coloration (with the whole subject of Protective Resemblance, Warning Coloration and Protective Mimicry, as interpreted in the light of the results of Finn, Judd, Bates, Wallace, F. Müller, Dixey and Marshall and Poulton, and illustrated by the colored frontispiece of protective mimicry among butterflies, including that wonderful *Papilio merope* and its mimicking harem); VII. Origin of Adaptations and of Species (general and theoretical with little direct discussion of insects); VIII. Insects in relation to Plants (foods, galls, plant-enemies of insects, pollination, structural modifications in relation to plants, ant-plants); IX. Insects in relation to other Animals (as predaceous, parasitic, food, disease-transmitters); X. Interrelations of Insects (parasites and hyperparasites, social life); XI. Insect Behavior (tropisms, instinct, intelligence); XII. Distribution (geographical and geological); XIII. Insects in relation to Man (as injurious and beneficial, with an historical sketch of early economic entomology in America based on Howard's writings).

Following is a selected, classified literature list of 1050-1100 titles, occupying 57 pages, and an 18 page index completes the volume.

The illustrations deserve especial mention for their clearness and cleanliness; many of them are entirely new and based on original drawings or photographs.

The book seems to us to be excellently adapted as a text-book in zoological courses in which the aim is to understand insects as a whole without laying especial emphasis on the taxonomy, or the special morphology or embryology of any particular group or set of structures, nor will the general reader or naturalist regret placing the volume on his own shelves.

A few errors or debatable statements have been noticed in a first reading. On page 18, "About fifteen thousand species" of Coleoptera is probably a slip of the pen for one hundred and fifty thousand; p. 70, the view "that the gonapophyses belong to the segmental series of paired appendages—are homodynamous with limbs—" is accepted, although not stated as an unquestioned dogma; p. 72, the claspers ("superior appendages", of the male Odonata are termed cerci, in spite of Heymon's recent paper.—P. P. C.

THE BUTTERFLIES OF MONTANA, Bull. 30 of the Univ. of Montana Biological Station, is a welcome addition to our literature. The Bulletin was primarily intended by the author, Prof. M. J. Elrod, for popular use for teachers and students of nature study, but it is of much value scientifically, as accurate data are given and our knowledge of geographical distribution will be extended. It is illustrated by an excellent colored plate, twelve plates in black and white, and one hundred and twenty-five figures. As a rule the figures are clear, but in a few cases, and especially in the Agapetinae, they are somewhat obscure. There are no serious errors, only a few trivial mistakes, which always occur in scientific publications[!], such as figuring the var. *subpallida* for *Aglais milberti*. There are good generic and specific descriptions, and in a number of cases the original descriptions are given. The preparatory stages, when known, are described. A number of articles and photographs, for the most part relating to collecting in Montana, will prove interesting. The nomenclature is that of Dyar's list. There is a good glossary and a map of Montana showing the localities where the specimens were collected.—CARL R. COOLIDGE.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

AFTER strenuous effort and much correspondence Messrs. A. E. Lister of Scranton, and W. D. Kearfott of Montclair, N. J., arranged a collecting trip to the mountainous wilds of Pennsylvania. On the eve of June 15th, the above mentioned, with H. W. and H. A. Wenzel and Dr.

Henry Skinner met at Wilkes-Barre. The following morning was spent at Harvey's Lake, where some fair collecting was had. In the afternoon it rained, and from that time on we lived in hope that sometime it would stop. Sunday and Monday were spent at Ricketts, North Mountain, Wyoming Co. Monday morning we went to Ganoga Lake and managed to pick up a few insects between the showers. At Harvey's Lake we had the pleasure of having with us Prof. C. O. Thurston of Kingston. We left North Mountain Tuesday morning. In spite of the continuous rain some nice things were taken, especially by the Micro-Lepidopterists, who will doubtless report later. The locality is in the boreal life zone. A pleasant feature of the trip was the warm hospitality of Colonel R. Bruce Ricketts.

DR. DYAR'S SQUARE DEALING.—Under the above caption Mr. D. W. Coquillett refers to a paper published by Mr. Knab and myself on March 14, 1906, as an advance separate from the Journal of the New York Entomological Society. We were obliged to criticize very severely Mr. Coquillett's work on mosquitoes, and it is therefore, perhaps, pardonable that he shows some rancor in his reply. I should allow him the fullest latitude and withhold any response, except that his statement of the circumstances is faulty, and clearly calls for correction. The work on the Carnegie Monograph was divided, the adults being assigned to Mr. Coquillett, the larvæ to me. In accordance with this arrangement, Mr. Busck gave me his larvæ on his return from the West Indies. Mr. Coquillett asked to examine them, and I allowed him to study them until I found that, in an access of overzeal, he was attempting to do my work to the neglect of his own. I then demanded the return of the material. This small difficulty was not, as implied by Mr. Coquillett, the cause of the preparation of our paper. That is explained in its own introduction. It only remains to add that its hasty publication was secured to anticipate Mr. Coquillett's names, which it was expected he would publish on information secured from me, and on larval characters, with which I consider he is not prepared to deal. In regard to his names being "tentative," they were so only as subject to my revision on larval characters. They were the best he could do with the adults alone. The matter had concentrated to a study of the larvæ as independent organisms, and, as such, I considered the field preeminently my own, including the baptism of the new forms.

I was quite unaware that I had changed Mr. Coquillett's marks of doubt from species to genus, and, if so, it was purely by inadvertence and without any such object as I am charged with. I have tried to deal with Mr. Coquillett's work as squarely as possible, and if I am obliged to condemn it unreservedly, it is without any personal animosity.

As far as the Carnegie Monograph is concerned, the situation has been finally clarified by removing Mr. Coquillett from any connection with it, which is now in my hands.—HARRISON G. DYAR.

CONCERNING *Monomorium destructor* Jerdon.—In a brief paper on certain tropical ants introduced into the United States, published in the January number of the ENT. NEWS, I recorded the occurrence of a well-known Indian ant, *Monomorium destructor*, in Alabama and Florida. The specimens from which this record was made were collected by Mr. Clarence B. Moore and sent to the Philadelphia Academy of Sciences. From the occurrence of the ants in two such widely separated localities, I inferred that these insects must have been recently introduced at different points on the Gulf Coast or were already widely distributed through the Southern States.

Since the publication of my paper, Dr. Skinner has kindly called my attention to certain facts which put the matter in a different light. He writes me that Mr. Moore frequently sends to the Academy sacks of earth from various localities in the Southern States. This earth is sorted over for small snails, and it was from such earth from Black Warrior River, Alabama, and Seminole Point, Florida, that the specimens of *M. destructor* were taken. The following letter from Mr. Moore to Dr. Skinner gives an interesting and satisfactory explanation of their supposed occurrence in the two localities: "I am inclined to think that the tropical ants are not found in the localities named in the article describing the ants. My boat is infested by myriads of these ants, and, no doubt, they got into packages of snails from the places named, after the snails had been brought aboard the steamer.

These ants do not make their appearance in cool weather, but appear in myriads when the hot weather sets in. They are fierce little chaps. One night I awoke with my legs stinging all over. I found the ants had swarmed into my bed and had been biting my legs. I found them with their noses buried in the skin.

No doubt the ants got aboard originally at some shipping centre, probably Jacksonville or Savannah."

It is probable that *M. destructor* has reached the ports mentioned by Mr. Moore or other ports in the Southern States, from the West Indies. Ernest André recorded its occurrence in Jamaica (*Revue d'Entomol.*, 1893, p. 152,) and I recently saw a colony nesting at the foot of a tree near Tallaboa on the southern coast of Porto Rico.—WM. M. WHEELER.

Doings of Societies.

A meeting of the Feldman Collecting Social was held at the residence of Dr. Henry Skinner, 716 N. 20th Street, Philadelphia, on April 18, 1906. Mr. Erich Daecke, President, in the chair. Nine members were present, and Mr. H. A. Wenzel, visitor.

Mr. H. W. Wenzel exhibited a box of Coleoptera captured April 18, 1906, by Elmer Wenzel at Swarthmore; the following four species were represented: *Cychrus viduus* and *stenostomus*, *Dicelus politus* and *ambiguus*. ?

Mr. Haimbach read an article from a local newspaper referring to the African sleeping sickness. Dr. Skinner remarked that the Tsetse fly, *Glossina morsitans*, or other species of *Glossina* are probably responsible for transmitting the said disease.

Mr. H. W. Wenzel said that he had observed larvæ of *Xylota pigra* actively feeding all winter under pine bark, also the pupæ were present, and on April 8th the fly made its appearance at Grenlock.

FRANK HAIMBACH, *Secretary*.

A meeting of the Feldman Collecting Social was held on May 16, 1906, at the residence of Mr. H. W. Wenzel, 1523 S. 13th St., Philadelphia. President Daecke in the chair. Ten members present, and Mr. Henry L. Viereck, visitor.

A letter from Professor Smith was read, in which he called attention to the fact that the periodical *Cicada* is due this year in the State of New Jersey, and asked Mr. Daecke to look out same and bring same to attention of members and ask them to collect and also try find its limitations.

Mr. Harbeck exhibited a box of Diptera and Coleoptera; of the the latter, one was *Corymbites hamatus*, taken at Germantown, Philadelphia, May 12, 1906; another was *Limonius stigma*, taken at Germantown, Philadelphia, April 13, 1906.

Mr. Viereck spoke about the bees which occur around Devon, and said there were probably 260 species to be found there. He did not find any nests, but four species of *Andrena* were taken along the roads sunning themselves. Mr. Viereck stated that in a letter from Dr. McCook the latter wrote that he had located no less than two hundred bee burrows in a lot about forty feet square. Nests of *Colletes inaequalis* were found in the earth about 12 inches deep, and of them Mr. Viereck stated that he had made successfully casts of plaster of paris.

Dr. Skinner exhibited two species of Coleoptera apparently new to science, one a *Cantharis*, the other near to *Elaphidion*.

Mr. Wenzel exhibited a box of Coleoptera, captured since the last meeting; series of the following species were shown: *Cychnus lecontei*, *Phymatodes ater*, *Callidium janthinum*, *Neocyttus caprea* and *Tillomorpha geminata*. The speaker said that he had cut the specimens of *Phymatodes* from oak branches, the same species taken on Five-Mile Beach are unicolored black, only one specimen having a white humeral band, the specimens cut out of oak in Gloucester County, New Jersey, are all banded, some having two white bands. *Tillomorpha geminata* and a species of *Agrilus* in the pupæ state were cut from the same branches.

Dr. Castle said that he had gathered a number of acorns last fall with *Balaninus* larvæ in them, with a view of rearing the said larvæ. He buried them in a flower pot in the garden, apparently well secured, but when he looked for the larvæ this spring they had all disappeared.

Dr. Skinner reported the death on April 11, 1906, of Mr. Roland Hayward, of Milton, Mass.

Mr. Daecke exhibited specimens of *Rhyphus punctatus*, Tenthredinidæ sp. ? Leptidæ sp. ? probably *Xylophagus abdominalis*, the latter species no doubt predatory on larvæ of Scolytidæ. Mr. Daecke also exhibited a nest of *Vespa maculata*, which had layers of two distinct positions, due to the breaking of the limb upon which it was built.

A vote of thanks was extended to Dr. Skinner for the manner in which he entertained the Social at the last meeting.

FRANK HAIMBACH, *Secretary*.

Minutes of meetings of Brooklyn Entomological Society, at the residence of Mr. George Franck, 1040 DeKalb Avenue, Brooklyn, New York.

January 4, 1906.—Twenty-two persons present, the President in the chair.

Prof. Smith reported that the manuscript of the "Glossary

of Entomological Terms" was ready for the printer, and Mr. Franck that \$710. had been subscribed toward the cost of the publication. The price per copy was fixed at \$2.00.

Dr. Wm. Barnes, of Decatur, Illinois, was elected a member.

The following officers for the ensuing year were then elected: President, Rev. J. L. Zabriskie; Vice-President, Edward L. Graef; Treasurer, Christopher H. Roberts; Corresponding Secretary, Archibald C. Weeks; Recording Secretary, George P. Engelhardt; Librarian, Roy S. Richardson; Curator, Geo. Franck; Executive Committee, the officers above named and Carl Schaeffer and Frank E. Watson; Program Committee, George Franck, Carl Schaeffer and Roy S. Richardson; Delegates to Scientific Alliance, of New York City, the President *ex-officio*, Richard F. Pearsall and Archibald C. Weeks.

February 1, 1906.—Sixteen persons present, the President in the chair. Mr. Weeks acted as Recording Secretary in the absence of Mr. Engelhardt.

Mr. Edgar L. Dickerson gave an outline of the scope and character of the work carried on in the entomological laboratory of the New Jersey Agricultural Experiment Station since 1889, embracing special investigations and methods of control of the mosquito and San Jose scale and insects infesting the the cranberry, squash, blackberry, etc., instruction in elementary entomology, formation of collections for the use of the Station and the State Museum, and the preparation and distribution of bulletins, reports, lists of insects and other entomological information.

Mr. William C. Wood exhibited some microscopical slides showing examples of the pollen of a species of *Asclepias* having two small pinions with oddly jointed ribs attached to a nucleus which was cleft sufficiently to admit of the insertion of the legs and feet of butterflies visiting the plant and to which the pollen adhered firmly and thus promoted fertilization as the insect flitted from flower to flower. Specimens of *J. cania*, *P. troilus*, *C. eubule* and *A. cybele*, collected at Miami, Florida, in June and July, with pollen clinging to their tibiae and tarsi, were shown.

ARCHIBALD C. WEEKS, *Secretary.*

2694



C. H. Osten Sacken.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

OCTOBER, 1906.

No. 8.

CONTENTS:

Aldrich—Baron Osten Sacken.....	269	Sanborn—Macrosiphum granaria	290
Johnson—Baron Osten Sacken	273	Howard—Diaspis pentagona.....	291
Crawford—A new Halictus from Nebr.	275	Wellman—Glossina palpalis wellmani	294
Skinner—Studies of Pyrgus syrichtus, tessellata, occidentalis and monti- vagus.....	277	Viereck—Vespoidea from Connecticut	302
Weber—Notes on Mosquitoes.....	279	Busck—Notes on Tortricid genera	305
Rehn—Some Utah Orthoptera.....	284	Girault—A new species of Eulophidae	305
Grossbeck—A new Limacodid	289	Editorial	308
		Notes and News	309
		Doings of Societies	311

Baron Osten Sacken.

By J. M. ALDRICH.

(Plate XI)

Karl Robert Romanovich, Baron von der Osten Sacken, commonly known among entomologists as C. R. Osten Sacken, was born in St. Petersburg, August 21, 1828, and died at his home in Heidelberg, Germany, on May 20, 1906.

In 1849 young Osten Sacken entered the service of the Russian Imperial Foreign Office. After some years of apprenticeship in diplomacy, he was in 1856 appointed Secretary of Legation in Washington. In 1862 he was made Consul General for Russia in New York City, and held the position until 1871, when he retired from the diplomatic service. After several journeys to Europe and back, he again settled in the United States, this time as a private citizen, and remained until 1877; in this year he returned to Europe, making his home in Heidelberg the remainder of his life.

From 1856 to 1877, it will be seen, Osten Sacken was almost continuously a resident of the United States. Before this he had begun to work on Diptera, especially Tipulidae. Imme-

We have received two interesting accounts of the life of Baron Osten Sacken, who may almost be called an American entomologist. These are by two eminent dipterists, and, not caring to discriminate, we decided to publish both.—Eds.

diately on getting settled in this country he began to organize things for extensive dipterological research. He published (in 1859) a catalogue of the described North American Diptera; he collected a large amount of material in the order; he made the acquaintance of most of the collectors in various parts of the country, and had them send him their Diptera; most of his accumulations he sent to Loew in Guben, Prussia, for description, reserving only a few families, principally the Tipulidæ and Tabanidæ, for himself; he also established relations with the Smithsonian Institution which resulted in the publication of a large part of the descriptive matter prepared by Loew and himself in the four volumes called by the general title of "Monographs of North American Diptera"; in short, it may be said that for some twenty-one years nearly all the work done on the order was directly due to the tremendous energy of Osten Sacken. Toward the close of the period, after visiting the principal type collections of Diptera in Europe, he published a second catalogue of North American Diptera, this time critical in character and exhibiting the actual status of the order in a manner which for clearness, completeness, and absolute mastery of the subject must forever remain an unapproachable model for later workers in the order. Osten Sacken had practically created himself all the main subject matter of the catalogue; hence the impossibility of any later entomologist ever occupying a similar position with regard to it.

In addition to the Smithsonian monographs and his two catalogues, Osten Sacken's *Prodrome to a Monograph of North American Tabanidæ*, published by the Boston Society of Natural History, and Loew's *Centuries of North American Diptera* (one thousand new species, published in Germany), embody the principal results of his labors.

As a fitting climax to his achievements, Osten Sacken successfully conducted a rather difficult and delicate negotiation, by which Loew was reimbursed for his labors on the North American material, and surrendered it all to the Museum of Comparative Zoology at Harvard, at that time much the best depository in the United States for such material. Osten

Sacken donated all his own material to the same institution, and the Loew-Osten Sacken type collection of Diptera was thus established; it still remains in good condition, and we may expect will continue to be useful for many years to come.

After returning to Europe, Osten Sacken felt that his labors in descriptive entomology were practically at an end. He continued to publish papers on the larger phases of classification, on insect habits, historical researches on entomology, etc., up to a few years before his death. In 1886-87 he published 216 pages of Vol. I. of the Diptera in the *Biologia Centrali-Americana*. In 1903 and 1904 he published his "Record of My Life Work in Entomology" (parts I and II printed in Cambridge, Mass.; part III in Heidelberg), which gives not only a review of his own activity, but includes critical estimates of several contemporary entomologists, and much historical matter on dipterology in general.

Osten Sacken's entomological work was almost completed twenty-eight years ago, hence he seems to belong to a generation that has long passed away. Only one living dipterist of this country, so far as I know, had a personal acquaintance with him—I allude to S. W. Williston, who met him on his last trip to this country.

Osten Sacken wrote in Russian, German, French, Italian, English, and on occasion in Latin; he preferred English, in which he had a literary style distinguished for clearness, force and accuracy. The striking qualities of his character were energy, farsightedness, persistence, keen discrimination, and conscientiousness. No pecuniary consideration ever lessened the completeness of his devotion to the Diptera. He always sought to be impartial, but the bent of his mind was such that he could never appreciate the argument of a man who disagreed with him. Such people seemed to him either mildly insane, or else animated with a personal animosity towards himself. In a letter to the writer, he says in regard to Loew, "I am conscious of having been perfectly fair towards him in my Record. I never doubted for an instant that he was a perfectly honest and veracious man. His idiosyncrasies I incline to ascribe to a congenital defect of the brain which

disturbed its normal function and finally culminated in the brain disease to which he succumbed. Every one of us, very probably, is afflicted with some malformation of this kind which more or less impairs his mental vision." May we be as charitable with Osten Sacken in regard to the two or three animosities which he especially cherished.

As a correspondent, he was delightful. During his American residence he accumulated large numbers of letters from entomologists in various parts of the country, which it seems from his Record he faithfully preserved till his death. This material would be of great value if ultimately acquired by some American institution; the history of American entomology during the '50's, '60's and '70's is largely embalmed therein.

Two years ago he wrote, "As the Grandfather of American Dipterology, I am very much interested in the progress of my descendants."

On another occasion, "At my age a man does well, when he is able to do so, to withdraw from his usual occupation or profession, and to leave the field for a younger generation. For about fifty years I have worked hard in my science and have reason to be content with the result. My Record I hope to have published bye and bye, and shall allow myself from time to time to publish "obiter dicta" on dipterology, like the short articles which have appeared in the Ent. M. M., London, recently. But, with these exceptions, I give up entomology, and shall not take any part in discussions. In many points my opinions are peculiar. I have explained them distinctly enough in my writings, and posterity will pronounce upon them. For this reason I do not enter into any further discussion about * * *, the result of which is, for me, of sovereign indifference."

And yet again, "My health is excellent, but my brain is easily tired and my working power has much diminished. I am in the position of a traveler at a railway station, waiting for a train to depart with. This departure I expect without the slightest apprehension."

He was a man, take him for all in all,
I shall not look upon his like again.

Charles Robert v. d. Osten Sacken.

By C. W. JOHNSON.

Baron Osten Sacken was born in St. Petersburg, Russia, August 21, 1828, and died at Heidelberg, Germany, May 20, 1906. Educated in St. Petersburg, he entered into the service of the Imperial Office in 1849. In 1856 he was appointed Secretary of Legation in Washington, and in 1862 Consul General of Russia in New York. Resigning in 1871, he returned to Europe, and in the autumn of 1873 revisited the United States, remaining until 1877, having been a resident of this country for twenty-one years.

At the early age of eleven he began to take an interest in entomology, his first paper appearing in 1854, "Proposal for a new classification of the Tipulidæ brevipalpi," based upon a detailed study of their male genital organs." These ideas were later incorporated in his paper on "New genera and species of North American Tipulidæ," etc., in 1860, and in his "Monograph on the North American Tipulidæ," in 1869. Additional notes on this family appeared in 1886-87 under the title "Studies on Tipulidæ." In 1858 Osten Sacken published the first catalogue of North American Diptera. This work was followed by that laborious and thankless task, the translating and editing of Loew's manuscript of his three monographs; the first appearing in 1862, the second in 1864, and the third, after an unaccountable delay on Loew's part, in 1872. Before the publication of his own monograph on the tipulidæ (part iv) the original manuscript was destroyed by a fire which occurred at Smithsonian Institution, January 24, 1865, and had to be rewritten, the volume not appearing until January, 1869. In recently referring to this matter, which is not mentioned in the monograph, he says: "The loss did not, in the end, turn out to be a loss to science. During a journey to Europe which I undertook soon after it had happened, I gained a great deal of information in the museums I visited that proved a benefit to the work when I reproduced it." Following the work on the monographs, his principal publications were: "Prodrome of a Monograph of the North American Tabanidæ," 1875;

"Western Diptera," 1877, and "Catalogue of North American Diptera," 1878.

It is indeed fortunate that such an able, generous, self-sacrificing man, having always the interest of American Dipterology at heart, should have taken up the study of this neglected order. In his co-operation with Loew he had an understanding that all species described by him should eventually be returned to the United States. This scheme, he says, "enabled me to receive without stint the numerous contributions in collections and specimens which were most generously put at my disposal by different collectors during my long residence in the United States." In 1877, owing to Loew's rapidly declining health, Osten Sacken attended personally to the transfer of the collection to Cambridge. This collection contained about 1300 species described by Loew, 330 identified by him, and about 1200 unidentified species; combined with Osten Sacken's collection, which comprises his types of Tipulidæ, the entire collection of Tabanidæ, Western Diptera, etc., makes a total of about 1800 determined species.

Since 1877 Baron Osten Sacken made his home in Heidelberg and continued his studies of the Diptera, publishing numerous papers, including "Enumeration of the Diptera of the Malay Archipelago," etc., 1881; "An Essay of Comparative Chætotaxy," etc., 1881, revised in 1884; "Diptera from the Philippine Islands," etc., 1882; "The Diptera Orthorrhapha" in "Biologia Centrali-Americana," 1886; "Studies on Tipulidæ," pt. 1, 1886, pt. 2, 1887; On the Characters of the Three Divisions of Diptera: *Nemocera vera*, *Nemocera anomala* and *Eremochæta*, 1892; On the so-called "Bugonia" of the Ancients, 1893, revised in 1894, with additional notes in 1895; "Record of my Life-work in Entomology," pts. 1, 2, 1903, pt. 3, 1904. His entomological publications in all number 179, and he described over 360 species of North American Diptera, and about 100 from the Malay Archipelago, Philippines, etc.

Baron Osten Sacken possessed what is so frequently wanting in scientific men, a thorough mastery of details, undoubtedly an inborn characteristic, which stood by him to the last and enabled

him to produce that wonderfully concise book, "Record of my Life-work in Entomology," a volume which so fittingly rounds out the life-work of this remarkable man. This fascinating book tells, among other things, the many differences existing among the contemporaneous dipterologists—a personal bibliography, as it were, in which the one at fault is always severely criticised. On the other hand, meritorious works and deeds are extolled in terms of true and lasting friendship. His manner of criticism is perhaps best shown in the following paragraph: "In regard to Loew I state here once for all that, while condemning his injustice in the strongest terms, I do not mean to impugn his personal character as a man of truth and honor. Loew, without any question, was a very superior man, *far superior to me in natural ability, as well as learning.* His colossal labors stand for him; what I have done has been to place his work in a better light and to give it a more distinct definition, which was due to history."

Usually he wrote his name C. R. Osten Sacken. In some of the library catalogues in which they have endeavored to give full names, it is Karl Robert Romanovich baron von Osten Sacken. I have adopted the name as it appears in his last publication, printed below his portrait accompanying part 3 of his life-work in entomology.

A new *Halictus* from Nebraska.

By J. C. CRAWFORD.

Halictus swenki n. sp.—♀.

Form rather slender, head and thorax black, segments 1-3 of abdomen red, segment 1 with a blotch of black at base, segments 4 and 5 black; apical margins of segments lighter, of 4 almost hyaline.

Facial quadrangle slightly longer than broad, hardly narrowed below, supraclypeal area and base of clypeus finely lineolate and finely sparsely punctured, clypeus apically shiny and with sparse larger punctures; face above antennæ shiny, somewhat roughened and with fine shallow indistinct punctures; the whole face almost concealed by white appressed pubescence; flagellum beneath, except 2 or 3 basal segments, red; mesothorax with rather abundant whitish pubescence, finely lineolate,

slightly shiny, with very fine rather close punctures; median groove well impressed, parapsidal grooves not very plain; truncation of metathorax not surrounded by a salient rim, its surface reticulately lineolate and with a few oblique punctures and from center of base a few short radiating striæ; base of metathorax finely reticulately lineolate, dull, with a few irregularly longitudinal striæ reaching about half way to apex except occasionally two or three medial ones which reach almost to apex; mesopleuræ roughened, vertically striate, with oblique punctures, more apparent anteriorly; metapleuræ finely lineolate, slightly vertically striate, with a few scattered punctures more numerous at the upper posterior angles; wings hyaline, nervures and stigma light honey-color, third submarginal about one-third longer than second, narrowed about one-third to marginal; tegulæ largely testaceous; legs black, anterior and middle knees, a stripe on front of anterior tibiæ and apical joints of tarsi reddish; hind inner spur with about four long teeth; abdomen transversely lineolate, closely and minutely punctured, segment 1 almost impunctate; bases of segments 2 and 3 with indistinct lateral hair patches; segments 4 and 5 covered with thin whitish pubescence; venter with segments 1-3 red, rest black.

Length about $7\frac{1}{2}$ -8 mm.

Six specimens from West Point, Nebraska, June 15, 1905; on *Rosa arkensena* (Prof. L. Bruner and Harry Smith).

This species is named after Mr. Myron H. Swenk, from whom I first received the species, in recognition of his excellent work on the bees of Nebraska.

In general form this is like *H. galpinsiae* Ckll., but that species has the head strongly punctured, the mesothorax much more closely punctured, the first segment of abdomen not transversely lineolate, as well as having the entire abdomen black. *H. ovaliceps* Ckll., the only described species from the United States with a red abdomen, has the face much longer and the punctures of the mesothorax much closer and stronger, nervures dark, etc.

This species has a most remarkable resemblance in its general form and color to *Sphecodogastra texana* Cress., which, in addition to its generic differences, also differs in the strong punctures of the head, larger size, first segment of abdomen not transversely lineolate, etc.

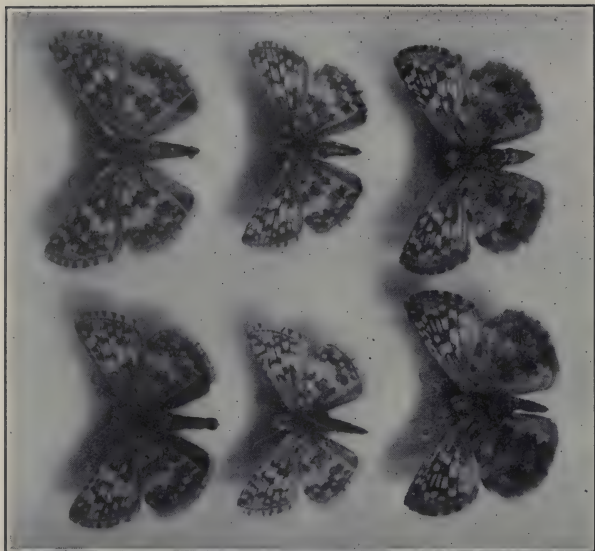
The type has been deposited in the National Museum and paratypes in the collections of the American Entomological Society and the University of Nebraska.

276a



UPPERSIDES ♂ ET ♀.

PYRGUS TESSELLATA SCUD.
 " OCCIDENTALIS SKINNER.
 " SYRICTUS FAB.



UNDERSIDES ♂ ET ♀.

PYRGUS TESSELLATA SCUD.
 " OCCIDENTALIS SKINNER.
 " SYRICTUS FAB.

Studies of *Pyrgus syrichtus*, *tessellata*, *occidentalis* and *montivagus*.

BY HENRY SKINNER.

(Plate XII)

There has always been much confusion in the literature in regard to *syrichtus*, *tessellata* and *montivagus*. W. H. Edwards placed the latter as a variety of *tessellata*. Scudder put his *tessellata* as a synonym of *montivagus*. Godman and Salvin in the *Biologia* also place *tessellata* under *montivagus*. Reakirt's original description gives the locality of *montivagus* as Rocky Mountains, Colorado Territory. (Coll. Tryon Reakirt, "Mexico, near Vera Cruz.")

The Reakirt collection was purchased by Herman Strecker, and in the third supplement to his *Rhop. et Het.* he says he possesses the types of *montivagus*, "one ♂, one ♀, Rocky Mts., Colorado."

Some years ago I examined these types, and they are *syrichtus* Fab. The original description also applies better to *syrichtus* than to *tessellata*, and I quote as follows: "*Hind wings with a marginal and submarginal row of rounded spots*,"—secondaries (below) "*two transverse white maculate bands; one near the base of three spots, edged posteriorly with brown lines, the other is mesial, of irregular outline, and bordered with black lines on both sides*." The maculate bands in *tessellata* are of a light greenish color, and in *syrichtus* there are no real mocular bands except as an outline in black.* I have never seen *syrichtus* from Colorado, and it is possible there may be an error in regard to Reakirt's locality, such mistakes being common enough in those days. I have a *syrichtus* from southwestern Texas and Key West, Fla., but from no other places in the United States. There can be no question as to what is means by *tessellata*. The original description says "*marginal row of spots on upper side of hind wing reduced to*

*In some specimens the inferiors below are light brown as though covered with a thin wash of this color, and the bands are more or less distinct, but hardly as well marked as in *tessellata* and not greenish in color.

a row of mere points or obsolete. Two pale greenish mocular bands on secondaries below."

Syrichtus ♂ has the inner half of the wings covered by long white downy hairs. The females differ in maculation as do the males of the two species, but the differences are not as well marked. *Syrichtus* ♀ is more brown than black. They may be separated from *tessellata* ♀ at a glance. In the NEWS, vol. xvii, page 96, I indicated a new form under the name *Pyrgus occidentalis*. This is not a species, but only a form or geographical race of *tessellata*. It has bothered me for a long time and has frequently been sent to me to name. It is smaller than *tessellata* and whiter in color, and the spots are larger in proportion to the ground color. It expands in the ♂ 25 mm.; whereas *tessellata* expands 32 mm. This is an average size for the two.

I have specimens from Northwest Territory (Geddes), California, Arizona, and Texas.

Syrichtus and *tessellata* may be compared as follows:

<i>Syrichtus</i> ♂	<i>Tessellata</i> ♂.
A marginal row of white spots on upper side of inferiors.	A marginal row of white pin points on upper side of inferiors or obsolete.
Macular bands on inferiors below pale greenish.	Macular bands on inferiors below white or brownish.
Long white downy hair on inner half of wings.	No such hair.

The females may be separated in the same way, except that the white hair is lacking in this sex. According to Godman and Salvin the genitalia of the two are different. The distribution of the species outside of the United States is given in the Biologia.

I HAVE been getting a considerable number of Hesperidæ to name and I am glad to see such an interest in these little butterflies, which have been so much neglected. Outside of the *comma* variations they have splendid specific characters, and with so many recent figures it seems strange that they prove so difficult to collectors. I am always willing to name spread specimens in this family. Mr. J. H. Cook (Sept. Jour., N. Y. Ent. Soc.) is to be congratulated on telling us what *Thanaos ausonius* really is.—HENRY SKINNER.

Notes on Mosquitoes.

BY DR. S. E. WEBER, Lancaster, Pa.

(Continued from p. 217, Vol. xvii, No. 6.)

DAY MOSQUITOES.

Culicada Felt (**Culex**) **canadensis** Theobald.

This species I have found to be distinctively a day mosquito. Its peculiar habits are somewhat modified according to the stage of the season. Observations were made in 1901 on this form in southwestern Pennsylvania, along the Susquehanna River, where it was found in abundance breeding in the waters of the old abandoned tide-water canal. The adults made their first appearance May 23rd, when at 10 a. m. a specimen was captured in the act of probing the point of my finger for blood. The last one of the season was seen October 29th in the afternoon.

Their attacks in the early part of the season were invariably made from 10 a.m. until noon, and in the gloaming of the evening, and by the latter part of September they were noticed during the middle of the day only, and not in the evening, for it seemed now too cool for this species to fly. In October they were numerous in the afternoon, more so between 2 and 3 o'clock, and on warm days were very annoying at that time. In a bark-pile, about 500 yards away from a breeding place, they seemed to have their abode, since they were intolerable at that place. Aside from the *Anopheles* this was the common species found in the immediately locality of Shenk's Ferry, Penna.

That the day-time habit is not only confined to this species is shown by the fact that *C. triseriatus* Say will also make her attacks in day time. In the handling of thousands of *Culex pipiens* none has ever offered to bite me, but *Culicada triseriatus* have alighted directly from the vessel where they were bred on my hand for the first sip of blood.

The same peculiarity may also be noted in other genera, notably in *Anopheles*, but in these species the day-time habit was only noticed in their first appearance in the spring.

ANOPHELES.

The species of this genus most common in the lower Susquehanna River breeding district are *A. maculipennis* Meig. and *A. punctipennis* Say, where I have taken the larvæ from the standing waters in the bed of the tide-water canal.

DAY HABITS.

Adults of both these species were taken from the windows in houses (on damp days) in March, 1901. In April they become active outdoors, more particularly in a garden where the shrubbery seemed to be full of them. In an old shop, close to this garden, they were also numerous, and at these two places the attacks from these insects were fierce and persistent in day time during the month of April. On the 17th, a warm day, were very numerous and seemed determined for blood. They appeared in the garden mostly in the afternoon and allowed themselves to be pushed from place to place on the back of one's hand. A member of the family while at repose in the middle of the day was bitten on her arm by an *A. punctipennis* in five places, which was caused by the victim in her sleep pushing the mosquito around until five rosy spots with pale centres were left on her arm. This demonstrates the persistence in getting the first sop after a season of rest. The more persistent specimens seem to have been the gravid females. And this peculiarity attending the day habit of these species I have only observed with their first appearance in the spring.

A. maculipennis is the most common in breeding district of the Susquehanna River, where it was found in such abundance that the people living in certain localities were obliged to kill numbers every evening before retiring. In small sleeping rooms in some dwellings gravid females, in some instances of unusual size, even without charge of ova and blood, were taken from rooms where the blood was often extracted from small children. Mosquitoes and malaria in this, like other localities, even these days of better knowledge, is still tolerated. From summer cottages on the banks of the Susquehanna I have known whole families to return home with malarial fever, and numerous individual cases whose infection was received from a visit along the river.

The periodic visits in houses some distance away from the canal bed was a peculiarity observed in this species; these were more prevalent for a few days or a week, and more particularly so on some days just before rain, when they seemed more active in their efforts in trying to get into the houses. Their hibernating as well as abode during activity was found in old shops, pig stables, spring houses, barns, etc.

In the breeding and hibernating place reproduction (see Pl. IX), we find *A. punctipennis* the most common species of the *Anopheles*, which I have found breeding in rain barrels. From observations in neglected yards I infer that these forms breed more in such places than is generally admitted. In the yard illustrated they were found in rain barrels and began to breed in July, lasting until the end of September, being most prolific during the month of August, *e. g.* in 1904, the highest number in a single barrel was four generations, aggregating upwards of 200 *A. punctipennis* larvæ. The egg deposits have been from six to fifty and upward of sixty.

THE NATURAL ENEMY.

The dragonflies I have noticed as one of the most important factors in the destruction of mosquitoes in rural districts, but not in cities. I have found several species of mites on the *Anopheles* mentioned, as well as *Chelanops sanborni* and other pseudoscorpions. In the larvæ the protozoa were of much annoyance in the rain barrel generations, some of them being literally covered with *Vorticella* so that their movements were much checked. They were most numerous on the first three abdominal segments where they were out of reach from the larva's mouth brushes, and it required quite an effort for the larvæ to keep them from occluding the air tube. The beautiful flower-like clusters of *Vorticella* are not the only infusorians, since numbers of *Paramæcia* and other animalcules were constantly hovering around them, and even at their mouth with safety, when particles of dust, etc., were eaten with dispatch by the larvæ.

One of the most important points in control work on mosquitoes is to distinguish between the various species of larvæ,

which are the principal factors with which the sanitarian has to deal. Since the young larvæ of *Anopheles* and that of *Culex territans* resemble one another in general appearance, and both possess the same food habit and remain at the surface of the water up to the 4th or 5th day, we may briefly compare the two forms, for it is not within the limits of these notes to give an account of the interesting life history of *C. territans*, which has not been treated completely.

The egg laying process of *C. territans* is somewhat similar to that of *C. pipiens*, the mass is built on the same geometrical plan, but the eggs are smaller and the process of color transformations are different. The mass usually contains about 150 eggs, and are of a canary-yellow color when deposited; the usual color changes taking place in about 10 hours when they may be found changed to a polished black color. The egg state in May and early part of June is about 38 hours. The young larvæ when first hatched differ from those of *C. pipiens* in many respects. Up to about 4 or 5 days old they are of a brown color. The thorax is of a pale or whitish color anteriorly, while the posterior part is brown. The first 3 abdominal segments are of a brown color, but the 4th abdominal segment is colorless, and the 5th, 6th and 7th are dark brown. The general shape is more slender than that of *C. pipiens* of the same age, which renders it a different picture from the latter when seen on the water. It seems more pointed towards the end or wedge shaped like that of *A. punctipennis* of same age, when seen with the naked eye. It requires close observation to recognize the difference from the latter since they are often found of about the same color and both spotted black and white. In *A. punctipennis* the 3rd abdominal segment is white; in *C. territans* the 4th segment is white at the same age. The larvæ of *C. territans* at this period of its life seems to lie horizontally at the surface of the water like *Anopheles*, but virtually it is below the surface, generally to the depth of the length of its breathing tube.

Like the larvæ of *A. punctipennis* those of *C. territans*, when disturbed, will remain on the surface of the water, dart away in different directions in short jerky interruptions of move-

ment. The larvæ of *C. pipiens* when disturbed will immediately take a drop downward in the water and often a whole gregation will descend in the unison of a single larva upon the slightest disturbance.

In my observation on the first generation of *C. territans* larvæ I was surprised on morning of the sixth day of the larva on seeing apparently no larvæ in the vessel. They now changed their habit of remaining on the surface of the water and descended when the vessel was touched, but did not stay down as long as other allied species, and on the whole fed more at the surface than at the bottom. The wide difference psychologically removes *C. territans* from the *pipiens* group, and is an example of physical expression or actions, etc., in animal life corresponding with anatomical structure. One of the most marked differences is found in the tracheal system. In the larvæ of the stage above mentioned we find very little more in the development than is present in *A. punctipennis* larvæ at the same stage of life. The main tube of the respiratory system does not contain any dilatation and is of uniform calibre from its opening at the apex of the air tube to its ramifications in the thorax. The system is constructed so widely different from that of *C. pipiens* in the same stage that they may be termed incomparable, but are similar to *Anopheles*. The transformations in the life history of *C. territans* are made with more dispatch than in some other forms, whole generations will pupate inside of 24 hours, and one of the most interesting actions is the quick moulting process; when they have arrived at that period they may be scared out of their skin upon the least provocation. If one of these larvæ is picked up with a pipette it may come out a pupæ, so quick is their transformation. The life cycle of this species occupies generally about 16 days, more or less, according to conditions. Breeding is continuous. Winter is probably passed, as adults which make their appearance the latter part of May.

I HAVE had occasion to look into the validity of *Thecla edwardsii* Saunders as a species, which stands in our lists. I have been unable to find any good reason to separate it from *calanus* Hubn. I will be pleased to have specimens of what is called *edwardsii* and gladly correspond with anyone interested in the subject.—HENRY SKINNER.

Some Utah Orthoptera.

By JAMES A. G. REHN.

The Brooklyn Institute of Arts and Sciences having received a small but very interesting collection of Orthoptera, collected by one of its expeditions into southwestern Utah, turned the material over to the author for study. The localities represented are all in Iron, Beaver and Piute Counties, except a few specimens from Salt Lake City, and as the region has been little visited the records are of considerable interest and value. A new species of the genus *Platybothrus*, was collected and is described herein.

***Acrydium incurvatum* (Hancock).**

Beaver Creek Hills, Beaver County.

These specimens are perfectly typical of this form, which has been recorded from Washington, New Mexico and Colorado.

***Cordillacris affinis* Morse.**

Buckskin Valley, Iron County; Beaver Creek Hills, Beaver County.

One specimen has the longitudinal bar on the caudal femora as present in *C. occipitalis* in addition to the transverse blotches.

***Platybothrus alticola* n. sp.**

Type.—♂; Beaver Range Mountains, 8,000-10,000 feet, Beaver and Piute Counties, Utah. [Brooklyn Inst. Arts and Sciences.]

Differing from *P. brunneus* (Thomas) in the considerably smaller size, the slightly more angulate fastigium, the more inflated tegmina and more robust caudal femora. From *P. sordidus* (McNeill) it differs in the tegmina being hardly shorter than the tip of the abdomen, in the pronotum being divided about in the middle and in the smaller size.

Size small; form robust. Head with the occiput moderately inflated, the vertex gently declivent to the fastigium, which, when viewed dorsad, is rectangulate with the margins very slightly concave; foveolæ strongly oblong, nearly three times as long as the greatest width, strongly impressed; face slightly retreating, arcuate; frontal costa

broad, slightly narrowing dorsad, failing to reach the clypeal sulcus by a considerable distance, biseriate and irregularly punctate, not sulcate; eye but little longer than broad, in length very slightly greater than the infra-ocular sulcus; antennæ in length somewhat greater than the length of the head and pronotum together, depressed, blunt. Pronotum slightly longer than the head, carinæ distinct, the lateral subparallel to the first transverse sulcus, slightly and regularly expanding to the caudal margin; cephalic and caudal margins broadly obtuse-angulate, that of the caudal margin more marked than of the cephalic, principal transverse sulcus cutting the median carina about in the middle; lateral lobes regularly but not greatly narrowed ventrad, the ventral width contained about once and a half in the depth. Interspace between the mesosternal lobes nearly twice as broad as long; interspace between the metasternal lobes cuneiform. Tegmina reaching to the tips of the cerci, inflated the broad costal field extending practically to the apex, which is narrowly rounded and nearer the sutural than the costal margin; anal field with its margin gently arcuate. Wings considerably shorter than the tegmina. Cephalic and median limbs not inflated. Caudal femora slightly longer than the tegmina, the greatest width contained about three and a half times in the length; caudal tibiæ with thirteen spines on the external margin.

General color ecru drab marked with seal brown. Head with a line ventrad of the foveolæ, the infra-ocular sulcus and a line behind the eyes seal brown, while the dorsal aspect of the head is broccoli brown; antennæ drab except proximad where the general color is present. Pronotum with the maculations on the lateral lobes usually found in this genus seal brown, with a general tone of broccoli brown dorsad, marked mesad of the lateral lobes with clove brown, which fades toward the median carina. Tegmina wood brown with a number of irregularly placed faint maculations. Abdomen marked with clove brown as usual in the genus. Caudal femur with three oblique fasciæ on the dorsal half of the lateral face, seal brown in color, a cloud of the same color is present at the base of the ventral section of the genicular lobes and the genicular arches are clove brown; caudal tibiæ vermilion, pale proximad and distad, spines black in their apical half.

MEASUREMENT.

Length of body	14.5 mm.
Length of pronotum	3 mm.
Length of tegmen	8.5 mm.
Length of caudal femur	9.6 mm.

A paratypic male has also been examined.

***Stirapleura decussata* Scudder.**

South Creek, Beaver County; Beaver Creek Hills, Beaver County.

This species presents a great amount of color variation, some individuals being quite dull and unicolor, except for the markings on the tegmina and limbs, while others have the head and pronotum strikingly marked with dark brown.

Stirapleura delicatula (Scudder).

Buckskin Valley, Iron County; Beaver Creek Hills, Beaver County.

These fully agree with a Kansas specimen.

Anlocara elliotti (Thomas).

Beaver Creek Hills, Beaver County.

Arphia canora Rehn.

Beaver Creek Hills, Beaver County.

This specimen has the fastigium slightly thicker than in typical *canora*, while the general size is slightly less, but otherwise it is inseparable.

Arphia teporata Scudder.

Beaver Creek Hills, Beaver County.

The specimens examined possess red wings and agree fairly well with representatives from Otero County, New Mexico.

Chortophaga viridifasciata (De Geer).

Buckskin Valley, Iron County.

Camnula pellucida (Scudder).

Beaver Canyon and Beaver Valley, Beaver County; Beaver Creek Hills, Beaver County.

Hippiscus corallipes (Haldeman).

Beaver Creek Hills, Beaver County; South Creek, Beaver County.

Specimens with the disk of the wings both red and greenish-yellow have been examined.

Hippiscus neglectus (Thomas).

Beaver Creek Hills, Beaver County; South Creek, Beaver County.

Considerable variation is noticed in this species, some individuals being decidedly blackish, others have the arcuate band

of the wings faint and one has the caudal margin of the pronotum distinctly marked with pale buff, which strongly contrasts with the blackish-brown of the pronotum.

Hippiscus calthulus (Saussure).

Beaver Creek Hills, Beaver County.

These specimens (♂ and ♀) do not wholly agree with Saussure's description, but are no doubt nearer this species than *H. lateritius* (Saussure), which has the internal face of the caudal femora unicolor instead of fasciate and the metazona transversely plicato-rugose cephalad. The wings in the specimens examined are red.

Dissosteira spurcata Saussure.

Salt Lake City.

Three males and one female of this species constitute the first record outside of California and Oregon.

Derotmema cupidineum Scudder.

Beaver Creek Hills, Beaver County.

Derotmema rileyannum Saussure.

South Creek, Beaver County.

A specimen from Salt Lake City is also doubtfully assigned to this species.

Trimerotropis ferruginea McNeill.

Beaver Creek Hills and Beaver Canyon, Beaver County.

One specimen of this species is quite hoary, but is otherwise inseparable from a normal dull ferruginous male from the same locality.

Trimerotropis laticincta Saussure.

Beaver Creek Hills, Beaver County.

This species has been recorded from Colorado, New Mexico, Texas and Nebraska.

Trimerotropis strenua McNeill.

Beaver Creek Hills, Beaver County; Salt Lake City.

Trimerotropis vincinulata Scudder.

Beaver Creek Hills, Beaver County.

Trimerotropis cyaneipennis Bruner.

South Creek, Beaver County.

Circotettix carlinianus (Thomas).

Beaver Valley, Beaver County.

Circotettix suffusus (Scudder).

Beaver Canyon, Beaver County.

Circotettix undulatus (Thomas).

Beaver Creek Hills, Beaver County.

Heliastus aridus (Bruner).

Beaver Creek Hills, Beaver County; South Creek, Beaver County; St. George, Washington County.

Schistocerca venusta Scudder.

Beaver Canyon, Beaver County.

Melanoplus cinereus Scudder.

Salt Lake City.

Melanoplus atlantis (Riley).

Beaver Creek Hills, Beaver County.

Melanoplus femur-rubrum (De Geer).

Beaver Canyon, Beaver County.

Melanoplus packardii Scudder.

Salt Lake City; Beaver Creek Hills, Beaver County; Beaver Range Mountains, 8,000-10,000 feet.

The single female from Salt Lake City is considerably larger than the two males from southwestern Utah, and slightly larger than the Beaver Range Mountains female.

Melanoplus bivittatus (Say).

Beaver Valley.

Scuddereria furcata Brunner.

Beaver City, Beaver County.

Anabrus simplex Haldeman.

Wildcat Valley, Beaver County.

Steiroxys pallidipalpus (Thomas).

Beaver Canyon, Beaver County.

Cecanthus niveus (De Geer).

Beaver Creek Hills, Beaver County.

A New Limacodid.

By JOHN A. GROSSBECK.

Monoleuca spadiceis n. sp.

♂.—Expanse, 22 mm.—Head and thorax bright cinnamon-brown; abdomen buff, reddish at the apex of the segments. Primaries light cinnamon-brown, the outer half somewhat paler; fringe partially dark like basal half. A narrow sinuous white line begins one-third from the base a little below cubitus and extends inwardly obliquely to the inner margin, but does not cross the fringe. A few white scales forming an indistinct broken line on the outer fourth of the wing can also be made out; this begins at the costa and extends but a short distance into the wing. Secondaries uniformly concolorous with the outer portion of the primaries. Beneath both wings are reddish buff, darker on the costal area.

Habitat:—Minnehaha, Ariz., August 26. One specimen in good condition from Mr. Hutson.

Type:—Col. J. A. Grossbeck.

This is the only western species of the genus so far known. It is a close ally to *subdentosa* Dyar, but in that species the transverse band is upright and sharply angulate.

Pyrgus centaureæ Ramb.

Occasionally, a particular insect is brought to the notice of entomologists in "Notes and News," or otherwise by a record of a capture, a new locality, or by an unusually late or early appearance, and though some of us have had experiences with the same insect we rarely bring out our own observations until we see that some one else has begun. Then not infrequently a general interest is aroused and the notes resulting form a really valuable contribution to our knowledge of the species. I saw Dr. Skinner's note on the above species in the June, 1905, number of the "News," and that by Mr. Cook in the March, 1906, issue, and I thought perhaps a note of mine might not be devoid of interest since it appears that the species is usually taken in single examples only or in threes or fours at most. I have collected on the Garret Mountain, at Paterson, N. J., every spring for the past five years, and find *centaureæ* on the wing sparingly about April 25; in the first days of May it is fairly abundant and is then in a very fresh condition. I have taken a dozen in a walk of a few hours and have seen

others, when the species was not the special object of my search. May 14 is the date of my latest capture, but the specimens at this time are very worn, for their period of flight is short. They are found almost always in open spaces surrounded by trees, where the sun shines hottest, skipping around the bluets (*Houstonia caerulea*), which often carpet the ground in these places. They are very wary and most easily lost sight of on account of their manner of flight and their sombre color. To go after these insects on a cloudy day would be quite useless, for they seem to prefer nooks where scarcely a breeze blows, and disappear among the grass even while the sun is obscured by a passing cloud.

Macrosiphum granaria Buckton.

BY C. E. SANBORN.

Winged viviparous female.

Head yellowish green; antennæ; first and second segments also base of third concolorous, remainder black. Length of segments, 1, 0.13 mm.; 2, 0.08 mm.; 3, 0.56 mm.; 4, 0.48 mm.; 5, 0.39 mm.; 6, 0.11 mm.; 7, 0.67 mm. Total length 2.49 mm. The sixth segment extends to the caudal end of the style. Sensoria circular, seven to ten on the third, nearly in a straight row, none on the fourth, the usual distal one on the fifth, and a group of seven or eight small ones at the distal end of the sixth segment. Eyes dark red, ocular tubercles prominent, ocelli prominent. Beak, first segment concolorous, second and third dark, 0.58 mm. long, extending to the meta-coxæ.

Prothorax yellowish green. Thoracic lobes dark, insertions yellowish; wings deflexed and normal, veins brownish, stigma smoky gray, 0.83 mm. long by 0.15 mm. broad. Total wing expansion 7.3 mm. Femora yellowish green proximally, and dark distally. Tibia yellowish green except distals, which are dark. Tarsi black.

Abdomen glabrous, yellowish green. Honey tubes cylindrical, black, strongly reticulated, 0.41 mm. long, extending a little caudad the base of the style. Latter yellowish green, halbert shaped, with a few setaceous hairs, 0.33 mm. long.

This form was found colonizing the leaves and stalks of oats June 3, 1904, at College Station, Texas.

What is apparently the same species was sent from the Naturhistorisches Museum zu Hamburg, by Dr. L. Rep, collected February 10, 1904, on oats, at Boernsen, Germany.

On the parasites of *Diaspis pentagona*.

BY L. O. HOWARD, Washington, D. C.

Diaspis pentagona has long been a resident of the District of Columbia, surely since 1892, when it was discovered on the grounds of the U. S. Department of Agriculture (Insect Life, vi, 287). Its prevalence in Italy upon the mulberry tree renders it a very dangerous enemy of the silk industry in that country, and Italian entomologists, notably the late Professor Targioni Tozzetti and Professor Antonio Berlese, have long sought means of eradicating it. In the absence of records of parasitism it was not at first thought to be at all feasible to utilize its natural enemies. In the summer of 1905, however, Professor Berlese urged the writer, in Florence, to send to Italy branches of trees infested by the *Diaspis* from America in the hope that parasites might be reared. Curiously enough, this scale does not seem to attack mulberry in the United States, and on the grounds of the Department of Agriculture there existed, until within a short time, a peach tree literally covered with the scale, within a hundred yards of mulberry trees which did not become infested. In the spring of 1906, during the writer's absence on a second trip to Europe, Mr. Marlatt secured a number of branches of lilac from the District of Columbia all abundantly infested by the scale, and sent them, carefully packed, to Professor Berlese. From these scales were bred in Florence three species of parasites: the first, *Tetrastichus canadensis* Ashmead; the second, *Prospalta murtfeldtii* Howard, and the third, a new species of *Prospalta*. On the writer's return to Washington at the end of May other branches were taken from the same tree, and rearing experiments were begun here. More than 200 specimens of the new species of *Prospalta* have been reared, 25 to 50 specimens of *Ablerus clisiocampae* Ashmead, and two specimens of *Perisopterus pulchellus* Howard. We have, then, four species of primary parasites of *Diaspis pentagona* to place on record, as follows:

(1) *Prospalta berlesei* n. sp. One specimen reared in Florence by Professor Antonio Berlese from scales sent from Wash-

ington, and more than 200 specimens reared at Washington from June 20 to July 5, from scales taken from the same tree.

(2) *Ablerus clisiocampae* Ashmead. Originally supposed to have been reared from the eggs of *Clisiocampa*, but, with little doubt, in reality reared from some Diaspine scale covered by *Clisiocampa* egg-mass. Subsequently reared from *Chionaspis furfurus*, in the District of Columbia, and from *Aspidiotus forbesi* on pear and apple, from Champaign, Ill., the latter rearing by Mr. W. G. Johnson.

(3) *Perisopterus pulchellus* Howard. Originally reared from a *Lecaniodiaspis* on linden in the District of Columbia in 1879; later from a *Lecaniodiaspis* from East Atchison, Mo.; from *Chionaspis pinifoliae* from Providence, R. I., and from *Aspidiotus forbesi* on currant at Champaign, Ill., the latter rearing having been made by Mr. W. G. Johnson; now reared in two specimens from *Diaspis pentagona* at Washington.

(4) *Prospalta murtfeldtii* Howard. Originally reared from *Aspidiotus uvae* by Miss Mary E. Murtfeldt at Kirkwood, Mo., in 1888; later from *Aspidiotus forbesi* on cherry and currant by Mr. W. G. Johnson at Champaign, Ill., and now reared by Professor Antonio Berlese from *Diaspis pentagona* at Florence, Italy, received from Washington, D. C.

(5) There is also one, presumably hyperparasitic, reared by Professor Berlese at Florence from *Diaspis pentagona* received from Washington, D. C. This is *Tetrastichus canadensis* Ashmead.

It now only remains to describe the new *Prospalta*, remarking upon the strange fact that this presumably American species should have first been reared by Professor Berlese in Florence.

***Prospalta berlesae* n. sp.**

Female.—Length, 0.73 mm.; expanse, 1.47 mm.; greatest width of forewing, 0.19 mm. Comes close to *P. aurantii*. Joint one of funicle about as long as pedicel, but slightly narrower; joint two rather shorter than joint one; joint three longer than joint one, and a little broader; club joints subequal in length, and each about as long as joint three of funicle; the basal joint very slightly wider than joint three of funicle, and the terminal joint tapering from near base to its pointed tip. In general effect the flagellum is longer and more filiform than in *P. aurantii*. Surface of thorax smooth. General color, a bright straw-yellow;

ocelli coral-red, eyes black; mesoscutellar parapsides black; abdomen fuscous, with narrow, light yellow bands between the segments; metanotum fuscous; antennæ light yellow-brown; legs yellowish; wings hyaline, with a very slight dusky shade on disc; veins yellowish; forewings



as with *P. aurantii*, but proportionately slightly longer and broader; disc densely, uniformly covered with very short cilia; marginal cilia of both wings as with *P. aurantii*.

Male.—Unknown.

Described from many specimens reared from *Diaspis pentagona*, Washington, D. C., June, 1906.

Type No. 9942, U. S. National Museum.

ADDITIONAL SPECIES OF MINNESOTA DIPTERA.—Since the printing of the Tenth Annual Report of the Minnesota Entomologist, in December, 1905, about 75 additional species of Diptera, captured in that State, have been named, representing the following families:

Agromyzidæ, Anthomyidæ, Bibionidæ, Cecidomyidæ, Chiromonidæ, Culicidæ, Dolichopodidæ, Drosophilidæ, Empidæ, Ephydridæ, Geomyzidæ, Helomyzidæ, Leptidæ, Lonchopteridæ, Muscidæ, Mycetophilidæ, Ortalidæ, Oscinidæ, Pipunculidæ, Psilidæ, Sapromyzidæ, Scatophagidæ, Sciomyzidæ, Sepsidæ, Simuliidæ, Syrphidæ, Tachinidæ, Trypetidæ.

These species have been listed, and a copy of the list mailed to each Station Entomologist and others known to be interested. Any one failing to receive a copy, and desiring one, can obtain it by writing to Mr. F. L. Washburn, Experiment Station, St. Anthony Park, Minn.

Glossina palpalis wellmani: a new Tse-Tse Fly which disseminates human trypanosomiasis.

By F. C. WELLMAN.

Published under the imprimatur of the Amer. Soc. Tropical Medicine.

(Plate XII)

INTRODUCTION.

When in London last year I was asked by the Dipterologist of the British Museum, Mr. E. E. Austen, to see if I could establish the presence of Tse-tse flies in southern Angola, from whence no specimens had up to that time been received. On arriving at Benguella I accordingly made a short journey up the Katumbela River for this purpose, and succeeded in taking a number of specimens of a fly, some of which I sent to Mr. Austen for determination. I then supposed from my *amateur* examination of the flies that they were *Gl. palpalis* Rob.-Des., as I knew that this fly is the principal Tse-tse fly of the west coast,* although I had received some specimens of what I believed to be *Gl. morsitans* from the interior to the east.† I have since received a letter from Mr. Austen, however, concerning them, in which he writes as follows: "The present specimens show that the form of *Glossina palpalis* found in Benguella represents a new subspecies, distinct from the typical form. I have therefore named it in your honor—*Glossina palpalis wellmani*." Although Mr. Austen's systematic description of the fly‡ is available, yet in view of the probable future importance of the animal to medical men practicing in southwest Africa, I have thought it worth while to in these columns call further attention to this new subspecies.

Glossina palpalis wellmani Austen (1905), Ann. and Mag. Nat. Hist, ser. 7, vol. xv, April, 1905, p. 390.

♂, ♀.—Frontal stripe pale ochraceous; thoracic markings much reduced, so that *the thorax in a well-preserved specimen appears spotted*, the antero-lateral markings taking the form of spots or blotches; the

**Vide Austen*, A Monograph of the Tse-tse Flies, 1903, p. 75.

†*Vide* New York Medical Journal, August 12, 1905, p. 329. This collection was accidentally destroyed but I have sent to the same district for more.

‡Annals and Magazine of National History, Ser. 7, Vol. xv, April, 1905, p. 390.

spot immediately behind the inner extremity of the humeral callus on each side small, ovoid, or nearly circular, and especially conspicuous when the insect is viewed from above and slightly from behind; femora pale, the dark blotches much reduced.



Glossina wellmani.

Katumbela River, Angola, W. Africa; November, 1904 (*Dr. F. C. Wellman*). Six specimens (1 ♂, 5 ♀). Types in British Museum.

Remarks. In the paper containing his description just quoted Mr. Austen says, "The British Museum possess two females of *Gl. palpalis* from the Gambia (*Dr. J. E. Dutton*) belonging to a form somewhat similar to *wellmani*; in the Gambian form, however, the ground-color of the abdomen is paler and the thorax is less conspicuously spotted."

HABITAT.

My specimens were taken in a small district lying along both banks of the lower stretches of the Katumbela River, which empties into the sea near the port of Benguella, Portuguese West Africa. Mr. Austen writes,* "The above specimens are of especial interest as being the first recorded examples of any form of *Gl. palpalis* from Portuguese West Africa, and as showing that the range of the species in question, which has recently been stated by Laverant† to occur at Sengaleam (about thirty miles from Cape Verde), extends at least as far south as 12° 30' S. lat. In all probability *Glossina palpalis wellmani* will eventually be proved to exist right down to the Cunene River, the southern border of Angola, if not further." Mr. Austen also wrote me suggesting that I try to establish the southern limit of the new fly. I have accordingly kept a sharp lookout for it and have made further inquiries concerning it with the meager result that I have received a single badly-damaged specimen of a Tse-tse fly purporting to come from the lower Kukema River, a couple of hundred miles to the east of the place where I found the subspecies under discussion, and a native report to the effect that a "fly belt" is known to exist on the upper Coanza still further inland. In view of Mr. Austen's belief that *Gl. palpalis wellmani* extends to the Cunene River I have visited the upper Cunene but failed to find any Tse-tse flies, and now, in accordance with his suggestion, written me when the flies were first discovered, I hope to, before long, visit the lower river with this object in view.‡ At least one species of Tse-tse is common in northern Angola and along the lower Coanza. This may very possibly be *wellmani*. The distribution of the species *palpalis* (with its subspecies and varieties) is now known to extend practically from Cape Verde to Damara Land.§

*Ann. and Mag. Nat. Hist. loc. cit.

†Comptes Rendus des séances de l'Académie des Sciences, t. cxxxix, p. 659.

‡ Mr. Ralstone, of the Benguella Railroad, has recently informed me that a Tse-tse fly is found lower down on the Cunene River. This is very probably *Gl. palpalis wellmani*.

§ Austen, Reports of the Sleeping Sickness Commission of the Royal Society, No. vi, August, 1905, pp. 279-80.

NOTE ON BIONOMICS.

I can offer no extensive contribution to our knowledge of the habits of the subspecies. I present here a few special notes made at the time of collecting. "Although the district in which the flies were taken contains some game, including eland (*Oreas canna livingstonei*), kudu (*Strepsiceros kudu*), roan antelope (*Hippotragus equinus*), the duyker (*Cephalolophus grimmii*) and Speke's tragelaph (*Limnotragus spekei*), yet I believe that human blood forms the greater part of their food. This is undoubtedly true over at least a part of the 'belt.' Along the right bank of the lower Katumbela from a place called Esupua to a point half a day's march up the river there lies the great Benguella caravan route near which there is little or no big game and over which constantly pass great caravans of half-naked Bantu rubber, slave and ivory traders. At Esupua one may see half a dozen of these large caravans camping in one place. It is here that the flies are most plentiful. They hide in the tall grass and sedges near the river, also on stones, trunks of trees and vines, and among the leaves of the low trees on the bank. When a native is sent to the river for water the flies rise from their resting places as he passes and follow him seeking for an opportunity to bite. On several different occasions I followed natives going to the river to fetch water. One of these was bitten twice, three were bitten once each, and seven were not bitten at all. The Bantus say the bite is painful, and I noticed that if a fly settled on a porter's back the man always slapped himself as it began to insert its probosces. Some of the specimens I took had abdomens greatly distended with blood. The flies do not always remain so close to the river. The first one I saw was between three and four hundred yards from the river in thin 'desert' bush, consisting of *Acacia reficiens* and other thorny shrubs which afford practically no shade. I do not believe *Gl. palpalis wellmani* shares the dislike for human ordure which has been ascribed to its congeners. I have frequently seen it in and around the filthiest native camps at some distance from the river where it had evidently gone for the purpose of sucking human blood. I have made no observations on the life history. I dissected an incomplete larva out

of the abdomen of a female. It was, I judge, rather more than 2.0 mm. long and of a light dirty yellow color. I have sent to Esupua to procure if possible some living flies and also some in alcohol so as to be able to send Mr. Austen a series of larvæ. The pupa I have not seen."

THE NEW FLY AND TRYPANOSOMIASIS.

I have lately seen three cases of human trypanosomiasis, all of whom had been frequently in the "fly belt" at Esupua. About 500 blood examinations were made, so that about three

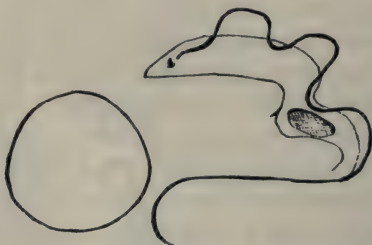


Fig. 1.—*Tr. gambiense* Dutton.

out of every 500 natives living in the districts adjacent to the Esupua "fly belt" harbor trypanosomes in their blood. The trypanosome found seems to be morphologically identical with *Tr. gambiense* Dutton. The shape of the posterior end, the arrangement of the centrosome, nucleus and flagellum, as well as the "set" of the organism on the slide, correspond with the same points in *Tr. gambiense*. The protoplasm stains somewhat irregularly with Romanowsky, taking on a basophilic reaction. The centrosome stains a dark purple, and the flagellum, which stains pink, seems to rise from or near it. The nucleus lies near the middle of the body and often occupies more than two-thirds the width of the parasite. It is oval in shape and stains red like other chromatin material. Following are measurements of a stained specimen of the parasite:

Length	(about) 24
Greatest width	3.5
Distance of centrosome from posterior end.....	3
Length of free flagellum.....	(about) 9
Largest diameter of nucleus.....	4

I have described and figured this parasite in another communication to which I refer the reader.* While sleeping sickness does not seem to be endemic as yet in the districts adjacent to the Esupua "fly belt,"† yet it is endemic in many situations in Angola from the north bank of the Coanza River clear to the Congo. As the country is being opened up it is inevitable that cases will from time to time be brought from the northern sleeping sickness centers to districts in the south, since many firms have trading posts and the Government has forts in both districts between which native soldiers and laborers are constantly being transferred. More forts are constantly being planted and trading posts established. The Umbundo-speaking Bantus, who number about 200,000, live to the east of the belt infested by the fly, and most of the males of these tribes are porters and rubber traders and constantly pass through the Esupua "fly belt," through which such occasional cases of trypanosomiasis‡ from Malange, Cazengo, Ambaca, Dondo and other points in the sleeping sickness districts north of the Coanza, to which I have above referred, are carried by the activities just mentioned. Thus, the flies have and will have more and more favorable opportunities to become infected and to infect the Umbundos among whom I have recently demonstrated the occasional presence of trypanosomiasis. I believe for several reasons that this presence of trypanosomiasis among the natives of south Angola is a recent development. Some of these reasons are:

(1) Two years ago I examined a series of nearly 400 of these natives with a negative result.†

(2) Recently about 500 examined by me revealed three infected individuals in practically the same district.

(3) No cases of sleeping sickness *originating* in the district have yet been seen.

*Interim Report on Trypanosomiasis in Portuguese Southwest Africa.

†Vide Wellman, Notes from Angola (Note X, *Jour. Trop. Med.*, November 15, 1905, p. 327..

‡As sleeping sickness cases are occasionally transported, those in the earlier stages of trypanosomiasis are undoubtedly also brought south.

†Vide *Jour. Trop. Med.*, February 15, 1904, p. 53.

(4) Sleeping sickness is reported to be spreading *southward* through Angola.

In view of the considerations brought forward under this head, we need not be surprised (if we remember the history of the spread of scourges of Uganda and the Congo) if *Gl. palpalis wellmani* play in the near future a leading rôle in West African Medical History.

RELATION OF *GL. PALPALIS WELLMANI* TO OTHER TSE-TSE FLIES.

The Tse-flies are known from other members of the same family by the palpi forming a complete sheath for the proboscis, by the peculiar antennæ with branched hairs on the upper surface only of the arista, by the characteristic wing venation, by the wings closing over one another like scissors, by the grooved wing membrane and by the peculiar hypopygium of the ♂. Following are brief notes on the known species with some special remarks on the particular species to which belongs the fly we have been discussing.



Fig. 2.—Proboscis and palpi of *Gl. palpalis wellmani* separated and magnified.

Genus **GLOSSINA** Wiedemann.

(1) *Glossina tachinoides* Westwood.—Described in 1850. Carries *Trypanosoma brucei* of nagana, the Tse-tse fly disease of game and domestic animals in Africa. Hind tarsi dark; abdomen buff with dark transverse bands, oblong pale area in center of second segment. Small species. Length 8 mm.

(2) *Gl. palpalis*, Robineau-Desvoidy.—Described in 1830. Carries *Tr. gambiense*, the parasite of human trypanosomiasis, which is considered to be the chief factor in sleeping sickness, and also *Tr. brucei*. Abdomen brown with triangular pale area in center of second segment. Darker than preceding and a larger species. Third joint of antennæ dark. Length 8-9 mm.

It is a variable species and under it falls the subspecies above considered:

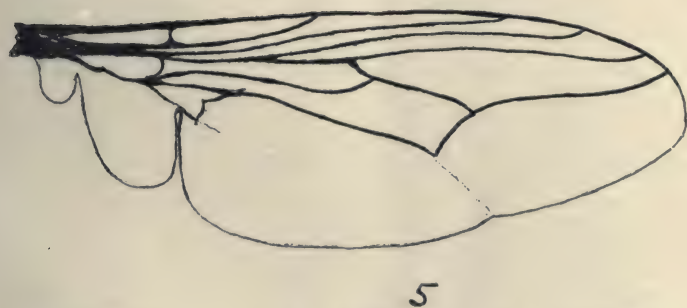


FIG. 1. HÆMATOPOTA.

FIG. 2. GLOSSINA.

FIG. 3. STOMOXYS.

FIG. 4. RIGHT ANTENNA GL. WELLMANI.

FIG. 5. WING OF GL. WELLMANI.

FIRST THREE FIGURES SHOW RESTING POSITION OF SOME BLOOD-SUCKING FLIES.

Gl. palpalis wellmani Austen.—Described in 1905. Differs from type by having the frontal stripe pale ochraceous; thoracic markings much reduced, presenting a spotted appearance; spot behind humeral callus small, avoid or nearly circular; femora pale, the dark blotches much reduced.

There is also an unnamed variety which was at first designated *Gl. palpalis* var. *tachinoides* Westw., and was thought to represent a fly which, when true specimens were obtained, was recognized by Mr. Austen to be of specific rank (*Gl. tachinoides* Westw. [*vide supra*]), the variation from *Gl. palpalis* remaining unnamed at last accounts received here, and I therefore set it down for the purposes of this paper as

Gl. palpalis var. *a*.—It is distinguished from *Gl. palpalis* principally by its pale femora and a yellow median stripe on the abdomen.* There is also another variation from the typical *Gl. palpalis* which may be differentiated as follows:

Gl. palpalis var. *b*.—Femora still paler than foregoing; palpi pale except at tips; abdomen reddish brown with the pale area on second segment oblong.†

(3) *Gl. pallicera* Bigot.—Described in 1891. Color brown to mouse grey. Resembles *Gl. palpalis* except that third joint of antennæ is pale (orange buff). Length 8 mm.

(4) *Gl. pallidipes* Austen.—Described in 1903. Carries *Tr. brucei*. Mouse brown with longitudinal markings. Front and middle tarsi generally tipped with pale brown or yellow. Large species. Length about 11 mm.

(5) *Gl. longipalpis* Wiedemann.—Described in 1830. Differs from preceding in having black tips to last two joints of front and mid tarsi. Thorax olive grey; head broad; hypopygium in ♂ smaller, darker and more hairy than in foregoing species. Length 9-11 mm.

(6) *Gl. morsitans* Westwood.—Described in 1850. Carries *Tr. brucei*. Smaller and head narrower; hypopygium of ♂ also larger and paler than in foregoing. Thorax pale in front with brownish longitudinal markings. Eyes in both ♂ and ♀ converge towards vertex. Tips of last two joints of tarsi dark. Resembles *Gl. pallidipes*. Length 7-9 mm.

**Brit. Med. Jour.*, loc. cit.

†*Ibid.*

(7) *Gl. longipennis* Corti.—Described in 1895. Carries *Tr. brucei* and probably another trypanosome of camels and mules. Brownish; dorsum of thorax with four sharp, dark oval spots in form of parallelogram, two in front and two behind transverse suture. Bulb of proboscis brown at tip. Large species. Length 10-11 mm.

(8) *Gl. fusca* Walker.—Described in 1849. Thorax drab. No spots on dorsum of thorax as in preceding; bulb at base of proboscis not brown at tip (pale yellow); abdomen russet brown. Large pale species. Length 11-12 mm.

In conclusion, I wish to thank Mr. Austen, the well-known authority on Tse-tse flies, who kindly examined and described my collections and suggested to me the study of the distribution and pathological importance of the subspecies discussed in this paper.

New species of Vespoidea from Connecticut.

By H. L. VIERECK.

Tiphia waldonii n. sp.

Related to *floridana*, from which it is readily distinguished by its structure and the color of the wings.

♂ 8 mm.—Color black. Face shining in part, largely opaque, and mostly closely punctured, the punctures adjoining and sufficiently coarse to give a rugulose appearance. The portion of the face immediately anterior to the anterior ocellus is shining and has well separated punctures. The vertex is sculptured in the same way as the preceding area. The distance between the posterior ocelli is not quite as great as that between them and the nearest eye margin. The second joint of the antennæ nearly as thick as the third and of the same length or a trifle shorter. Excepting the first joint, the joints of the antennæ are subequal. Pronotum distinctly margined anteriorly. The pronotum, mesonotum and scutellum punctured in much the same way as the vertex. The postscutellum reticulate. The metanotum with two oblong areas, that are adjoining and approximately three times as long as wide at base, being a little narrower at the apex than at the base. These areas are formed by rather distinct raised lines, and the spaces themselves are somewhat shining and somewhat roughened. The first abdominal segment approximately as in *floridana*. The median tuberculate impunctate at apex of first dorsal abdominal segment extending to the apical margin. The succeeding abdominal segments all punctured, the apical more closely than the basal segments. The wings are hyaline,

cloudy shade. The stigma very dark brown, the nervure brownish testaceous. The third abscissa of the radius with the second transverse cubitus forming an obtuse angle. The tuberculate process on the first abdominal segment is apparently not normal, as in the paratype it is absent.

Type locality.—New Haven, Conn.

One male collected by B. H. Waldon, August 16, 1904. Paratype male from North Haven, Conn., by the same collector, August 3, 1905.

***Tiphia brunneicornis* n. sp.**

In many respects this answers the unsatisfactorily brief description of *tarda* (say). From the same, however, it differs in having the stigma brown instead of black. Color black, face mostly shining, with close and with greater part almost adjoining punctures.

♂ 7 mm.—The vertex polished and with the punctures quite separate. The distance between the posterior ocelli approximately a little greater than that between them and the nearest eye margin. The relation between the antennæ joints practically as in *waldonii*. The pronotum, mesonotum and scutellum bearing the same relation to the vertex as in the preceding species. The postscutellum closely punctured, having a rugulose appearance. The enclosure on the metanotum in the form of a trapezium, forming but a single area, with the basal and apical sides parallel, the apical side being a little shorter than the basal side. The area shining and finely roughened. The wings practically as in *waldonii*, but the etoid abscissa of the radius forming with the second transverse cubitus a reversed figure "3." Abdomen polished with the first and second segments sparsely, finely punctured, the punctures on each succeeding segment becoming closer and more distinct. The first abdominal segment with a median transverse groove as in *waldonii*.

Type locality.—New Haven, Conn.

One male collected by H. L. Viereck, July 6, 1904.

***Tiphia eyregia* n. sp.**

♂ 6 mm.—Head and thorax approximately as in the preceding species. Wings as in *waldonii*. Abdomen as in *brunneicornis*, but there is no transverse median groove on the first abdominal segment. The mandibles almost entirely blackish. The antennæ brownish beneath, and the tarsi brownish. The area of the metanotum partially bisected by a median raised line. Inclosure is nearly smooth, being finely roughened.

Type locality.—New Haven, Conn.

One male collected August 3, 1905, by H. L. Viereck. Paratype male, collected at West Rock, New Haven, Conn., August 13, 1905, by the same collector.

***Tiphia relativa* n. sp.**

In structure and sculpture approximately like the preceding species. The antennæ entirely black and the tarsi more blackish than brownish. The inclosure is rather coarsely rugulose with no trace of a bisecting line. In the paratype the inclosure is more or less completely bisected. The typical form has the wings colorless, excepting the nervures and the stigma. Four of the paratypes belong to a variety with brownish wings.

Type locality.—North Haven, August 3, 1905 (B. H. W.). The var. from E. Hartford, August 2, and Scotland.

***Odynerus (Ancistrocerus) waldonii* n. sp.**

Closely related to *birenimaculatus*, but with ornaments white as in *albophaleratus*.

♀ 13 mm.—In most respects like *birenimaculatus*. The metathorax, however, different in that the ridges bordering the posterior aspect are not very transient and lacking two sharp teeth at the summit. The maculation differs as has already been pointed out. In addition to the difference in color, there is a difference in extent and pattern. For example, the scape, postscutellum and metathorax are immaculate, excepting four small dots on the postscutellum. The second dorsal abdominal segment is immaculate, except the apical margin. The clypeus has two brown dots, one a short distance on either side of the center or near the center. There is a median longitudinal brown line on the posterior fourth of the clypeus, extending to the superior margin of the clypeus. On the anterior third of the clypeus, extending to the anterior margin, there is a brown funnel-shaped mark, terminating in a brown line. There are no two lateral oblique spots on the first abdominal segment. The coxæ are immaculate, as are the femora, except a yellow spot at apex of the anterior femora, and more or less brownish at anterior aspect of the anterior femora, and a narrow brownish margin at apex of middle and posterior femora. The tibiæ on the anterior aspect and outer aspect mostly yellow, brown posteriorly and at apex. Tarsi entirely brown.

Type locality.—New Haven, Conn.

One female taken May 15, 1903, by B. H. Waldon.

***Anoplius humilis* Cress.**

Previously known only in the ♀ sex. The ♂ differs from the ♀ in the usual way and in having nearly all of the basal half of the posterior aspect of the posterior tibiæ and the dorsal apical abdominal segments whitish.

One ♂, New Haven, June 9, 1905 (B. H. Waldon).

Notes on some Tortricid genera.

By AUGUST BUSCK.

In his Handbook British Lepidoptera (1895) Meyrick includes Clemens' genus *Exartema* in the European fauna on the mistaken supposition that it is equivalent to Lederer's idea of *Eccopsis* Zeller, and continental authors (Rebel & Baron de Crombrugghe de Picquendaele) have adopted this synonymy.

Meyrick defines Clemens' genus correctly, though not exhaustively, but the single European species included, *latifasciana* Haworth, does not answer to this description, having veins 3 and 4 in the hind wings distinctly separate, not connate or short-stalked as in the type and in the other American species of the genus. Moreover, the hind wings in *latifasciana* are narrower than the forewings instead of broader, as in Clemens' genus, and the form of the hind wings is quite different, termen being very oblique and nearly straight, while in the American forms it is less oblique, sinuate below apex and bulging out at veins 3, 4 and 5; and the dorsal edge is evenly rounded in *latifasciana*, not sharply incised at vein as is characteristic of the genus *Exartema*.

There is, however, another European species, which is in every respect identical in structure with *Exartema*, namely *Hartigiana* Ratzeburg, and Lederer's genus *Cymolomia* precedes and must therefore supplant Clemens' genus.

No existing generic name seems applicable to the genus with *latifasciana* as type and it may be known as *Loxoterma*, which name thus stands for *Eccopsis* Lederer (non Zeller), and *Exartema* Meyrick (non Clemens).

A new species of Eulophidae.

By A. ARSENE GIRAULT.

Eulophus guttiventris sp. nov.

Male.—Length, 1.45-1.58 mm.; 1.54 mm., average.—Body brilliant metallic green, with the following exceptions; legs pale straw-yellow, excepting portions, or most of all of the coxæ, and the dusky apical tarsal joints; antennæ uniformly dusky, excepting the fulvous pedicel,

and the metallic-blue scape; mandibles fuscous; venation concolorous with the legs; ventral surface of the petiole pale; wings clear, iridescent; eyes garnet-red; a large portion of the ventum of the basal half of abdomen, pale, forming a whitish area; face metallic-blue; tibiae of the posterior legs more dusky. Head rounded, at least three times wider than long (dorsal aspect), the whole of the face concaved and marginate, shagreened with sparse whitish hairs; eyes large, subreniform, with minute hairs. Head wider than thorax. Thorax longer than head and abdomen combined, shagreened, pilose; mesothorax with a deep femoral furrow; on each side, just caudad of the insertion of the posterior wings, a conspicuous tuft of stiff hairs. Portions of the pleuræ and the metathorax glabrous. Abdomen ovate, broadest at caudal fourth, pilose, the color somewhat variable in intensity. Segment two longest, twice longer than 3; 3 and 4 equal; 5, 6 and 7 equal, one-third smaller than 3; the remaining segments abruptly narrowed, the anal segment acute. Submarginal vein slightly longer than the marginal; postmarginal vein more than one-half as long as the marginal; stigmal vein distinct. Wings normal. Antennæ 9-jointed, hispid, 3-branched, a branch arising from the side of the base of each of the three proximal funicle joints, the proximal branch the longest; ring-joints absent; ramifications of the antennæ more hispid. Scape nearly club-shaped, thickest at its middle, nearly as long as the next three joints combined; pedicel globose, about one-half the length, or more, of the first funicle joint. Joint 1 of funicle cylindrical, about one-third the length of the scape and slightly over half the length of the following joint, its ramification more slender, and at least six times its own length; joint 2, the same, nearly twice the length of joint 1, intermediate in length between 1 and 3, its ramification slenderer than itself, and at least three times longer; funicle joint 3 twice the length of joint 1, slenderer, its ramification about equal to it in width, and at least twice its own length. Funicle joints 4 and 5 slender, equal in width to the ramification of the second funicle joint, about equal in length, both slightly shorter than the scape, and one-third longer than joint 3. Club abruptly thicker, about equal in length to joint 3 of the funicle, composed of two closely united and unequal joints.

From three specimens.

Female.—Length, 2.2 mm., average.—The same; larger. Color of the ventum of the abdomen more uniform, the large whitish spot more or less indistinct; the thorax and scutellum more strongly shagreened, in fact punctate, the reticulations forming pentagons. Abdomen ovate, wider, broadest at the middle, or at the third segment; second abdominal segment much the longest. Scape of antennæ pale, the remaining joints dusky. Antennæ 9-jointed, including a single ring-joint, cylindrical, pilose. Scape long and cylindrical, longer than the first funicle

joint, but much shorter than the pedicel, ring-joint and first funicle joints combined; pedicel cuneate, about the shortest joint, about one-third the length of the first funicle joint; joint 1 of funicle the longest joint of the flagellum, nearly as long as the scape, and twice the length of joint 3 of funicle; funicle joint 2 over one-half the length of joint 1 of funicle, and one-half longer than the following joint; funicle joint 3 shorter, oval, slightly longer than the two distal joints of the antennæ; club 3-jointed, not very distinct from the funicle, its basal joint widely separated and truncate cephalad and with somewhat pointed lateral angles; its two distal joints closely united, unequal in size; joint 1 of club slightly shorter than joint 3 of funicle, joint 2 of club slightly shorter than joint 1 of club, ovate; the final joint small, about equal to the pedicel.

From two specimens.

Described from three males and two females reared from the larvæ of *Tischeria malifoliella* Clemens, Washington, D. C., June 14-20, August 5 and 22 (Quaintance), and October 30, 1905, and Newark, Delaware, August 22, 1905 (C. P. Close), on apple foliage, in connection with the Deciduous-fruit Insect Investigations, Bureau of Entomology, U. S. Department of Agriculture.

Type.—No. 9640, United States National Museum, 1 ♂, 2 ♀.

This species was pronounced new by Dr. William H. Ashmead, United States National Museum, Washington, D. C., to whom the writer acknowledges his indebtedness.

THE editor of the NEWS went to southeastern Idaho, in the sage brush desert, during July, with the intention of doing some collecting there and in the Yellowstone Park, but had the misfortune to be taken sick in the sage brush desert, the heat in the west being unusually great during the past summer. Whether the illness was due to the local conditions or to the physical condition of the individual he does not care to discuss, but he can't help thinking of the following:

Going west on the Union Pacific, through the southern portion of Wyoming, the view is one of continuous sand and sage brush, a veritable desert. It is told that Mark Twain was going through, one time, and in the dining car his eye spied "Sage chicken" on the bill of fare. He called the waiter and asked what that was.

"It's chicken, sah, raised right through here, sah."

"Can they fly?" asked the humorist.

"Yes, sah, they can fly, sah."

"Well, then, I don't want any. Anything that can fly and stays in this country long enough to be killed can't be much good. None for me."

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—Ed.

PHILADELPHIA, PA., OCTOBER, 1906.

The editorial department of the NEWS has its trials and tribulations as well as its joys, and it may do some good to tell our readers of both. We are in danger of ruining our bank balance trying to accommodate the people who wish to *get in the next number*, and in endeavoring to please them this issue contains forty pages. Much of the manuscript we receive is typewritten, but some received is a disgrace to the authors, necessitating the looking up of scientific names in the literature, which can only be guessed at from the writing. We don't know all the names of insects and plants, and don't wish to, but some authors appear to overestimate our knowledge. Then, some names are proposed for the first time. Of course, the author knows what they are, but others can only guess. One of our joys is the fact that we get many letters in praise of the NEWS, and if it did not please, it could not have the phenomenal and steady growth which is continuously maintained. We regret to say that some subscribers fail to appreciate it a dollar's worth, and we have decided in future to make prepayment compulsory.

MR. G. W. KIRKALDY, in the September, 1906, number of THE ENTOMOLOGIST, gives a list of papers of special interest to the British entomologists (1905-06); he says, "There are many papers published in America of great value to British workers, although dealing exclusively with American forms." Of fourteen titles, five were published in ENTOMOLOGICAL NEWS.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

DR. JOHN B. SMITH is spending the summer in Europe. We hope he may return greatly benefited.

E. C. COTTON has been appointed Assistant Entomologist at the Tennessee Agricultural Experiment Station.

DR. PHILIP P. CALVERT has been in the western United States and Mexico, and will attend the International Geological Congress in the City of Mexico.

OTHO C. POLING and Karl Mueschen of Quincy, Ill., have been on a collecting trip in the southwest. We learn from a newspaper account that they did some work near Silver City and Deming in New Mexico, and at the latter place took a specimen of *Sphinx elsa*. We will be glad to hear more in regard to what they did.

PROF. F. H. SNOW, of the University of Kansas, has returned from a collecting trip to the Baboquivari Mountains in southern Arizona. He brought back a large collection of insects, including *Amblychila baroni*. Prof. Snow has made many trips to the southwest on collecting expeditions and has turned up many new and rare species in the past twenty-five years.

"It is probable that we are aware of more imperfections in the system than Dr. Skinner is, owing to his lack of critical study of genera." (Dr. Dyar on his classification of the Hesperidæ.)

The gods forbid that Dr. Dyar publish any more of the imperfections he knows, as the thing is wretched enough as it stands.—HENRY SKINNER.

EXPLANATION of Terms Used in Entomology. This very important work, published by the Brooklyn Entomological Society, and prepared by Dr. J. B. Smith, is now on sale. It is a publication that was badly needed and the author and the Brooklyn Society are to be complimented on its completion. We do not see how any working entomologist can possibly get along without a copy.

ENTOMOLOGICAL NEWS has never been published during July and August, and it is so stated on the second cover page. This is a time of year when nearly everyone is devoting some time to collecting, and most persons take their vacation, so the journal is not as much needed during the two months mentioned. Moreover, the editors require a rest from their laborious duties and prefer to take it during the hottest summer weather.—Eds.

THE September issue of the NEWS contains an article by Mr. T. D. A. Cockerell on preoccupied generic names of Coleoptera. No. 8 of this article reads: "*Polystoma* Steph., 1835 (not Led., 1800); *Emplenota* Casey, 1884, is available."

I have no means to verify whether Lederstroem's (I believe) *Polystoma* in Vermes is still a valid generic name; if so, *Polystoma* Steph. must fall, and Casey's *Emplenota* takes its place. *Polystoma* Steph., however, has been lately universally assigned only a subgeneric rank of *Aleochara*. On page 244 of the same article the parallel between *Coenonycha* Horn, 1876, not *Coenonica* Kraats, 1857, is not a good illustration of the subject in discussion, as *Coenonycha* is derived from the Greek *roinos* (common) and *onyx* (nail), whereas *Coenonica* is composed of the words *roinos* and *oikos* (house).—A. FENYES.

TACHYRIS ILAIRE IN WEST VIRGINIA.—On June 12, 1906, while walking through a grassy orchard at French Creek, West Virginia, a large white butterfly of unfamiliar appearance flew leisurely toward me and alighted upon a red clover blossom. Calling to my little son, who was chasing fritillaries near by, I took his net and caught the stranger. An examination of the butterfly showed it to be a very well preserved male of *Tachyris ilaire*. The specimen is marked like those from Florida described by Dr. Henry Skinner in ENT. NEWS, May 10, 1894, and for which he proposed the varietal name *neumoegenii*. The wings above are white, without the dark tips seen in the examples from Central America. Beneath, the primaries show at the base distinct markings of orange, and the secondaries are pale lemon-yellow.

This butterfly was taken within fifty yards of the spot where on October 15th, 1905, I caught a *Vannessa j-album* as it fluttered about beneath the clap-board roof of an old wagon-shed. So far as my knowledge extends, these are the only specimens of the two species that have been collected in West Virginia, and they probably represent two of the most extreme southern and northern forms which visit this locality.—FRED E. BROOKS.

PROF. H. A. SURFACE, Economic Zoologist of Pennsylvania, states that his present scientific assistants are A. F. Satterthwaith, Clerk; N. G. Miller, Assistant, with the degree of Master of Sciences from the Pennsylvania State College; L. R. White, Bachelor of Sciences, Pennsylvania State College; T. C. LeFevre, Bachelor of Science, Pennsylvania State College; D. K. McMillan, Bachelor of Science, Dickinson College; Chas. F. Noll, Bachelor of Science in Agriculture, Pennsylvania State College; W. H. Wolff, Bachelor of Science in Agriculture, Pennsylvania State College; P. H. Hertzog, Bachelor of Pedagogy; F. Z. Hartzell, Bachelor of Science in Biology, Lafayette College, and W. R. McConnell, Bachelor of Sciences in Biology, Pennsylvania State College. Some of these men are in the field as inspectors and others

are assisting in the office. There are other assistants besides those who are college graduates, but who are doing most excellent work in a line that is greatly needed in this State at the present time. The entomologists to the Board of Agriculture of the State are Franklin Menges, York County, and D. J. Waller, Indiana County.

TAUGHT BY AN INSECT.—Brunel, the famous engineer, was indebted to an insect for a great and useful invention. He was in a shipyard one day watching the movements of an insect known in English as the naval woodworm, when a brilliant thought suddenly occurred to him. He saw that this creature bored its way into a large piece of wood upon which it was operating by means of a very extraordinary mechanical apparatus.

Looking at the animal attentively through a microscope, he found that it was covered in front with a pair of valvular shells; that with its foot as a purchase it communicated rotary motion and a forward impulse to the valves, which, acting upon the wood like a gimlet, penetrated its substance, and that as the particles of wood loosened they passed through a fissure in the feet and thence through the body of the borer to its mouth, where they were soon expelled.

"Here," said Brunel to himself, "is the sort of thing I want. Can I reproduce it in an artificial form?" He forthwith set to work, and the final result of his labors, after many failures, was the famous boring shield with which the Thames tunnel was excavated.—*Newspaper*.

Doings of Societies.

The postponed meeting of the Feldman Collecting Social of June 20, 1906, was held on the evening of June 27, 1906, at the residence of Mr. H. W. Wenzel, 1523 S. 13th Street, Philadelphia. The meeting was called to order at 9.10 P. M., President Daecke presiding. Eight members were present.

Mr. Harbeck called attention to an omission in the communication of Mr. Daecke of last meeting, regarding the raising of *Balininus* larvæ. From ten chestnuts twenty-five larvæ had emerged, which were found this spring, dead and dried up in the hatching jars.

Mr. Seiss spoke of some egg masses of *Tenodera sinensis* he had received from Mr. Laurent, October 5. He had first observed the young on May 18, 1906, when batch one was hatched, batch two was found May 20, while three was observed May 24. He stated that when first hatched, they were

of a pale cream color, but changed to a light brown after a few hours exposure in the sun. Later they entirely disappeared from view.

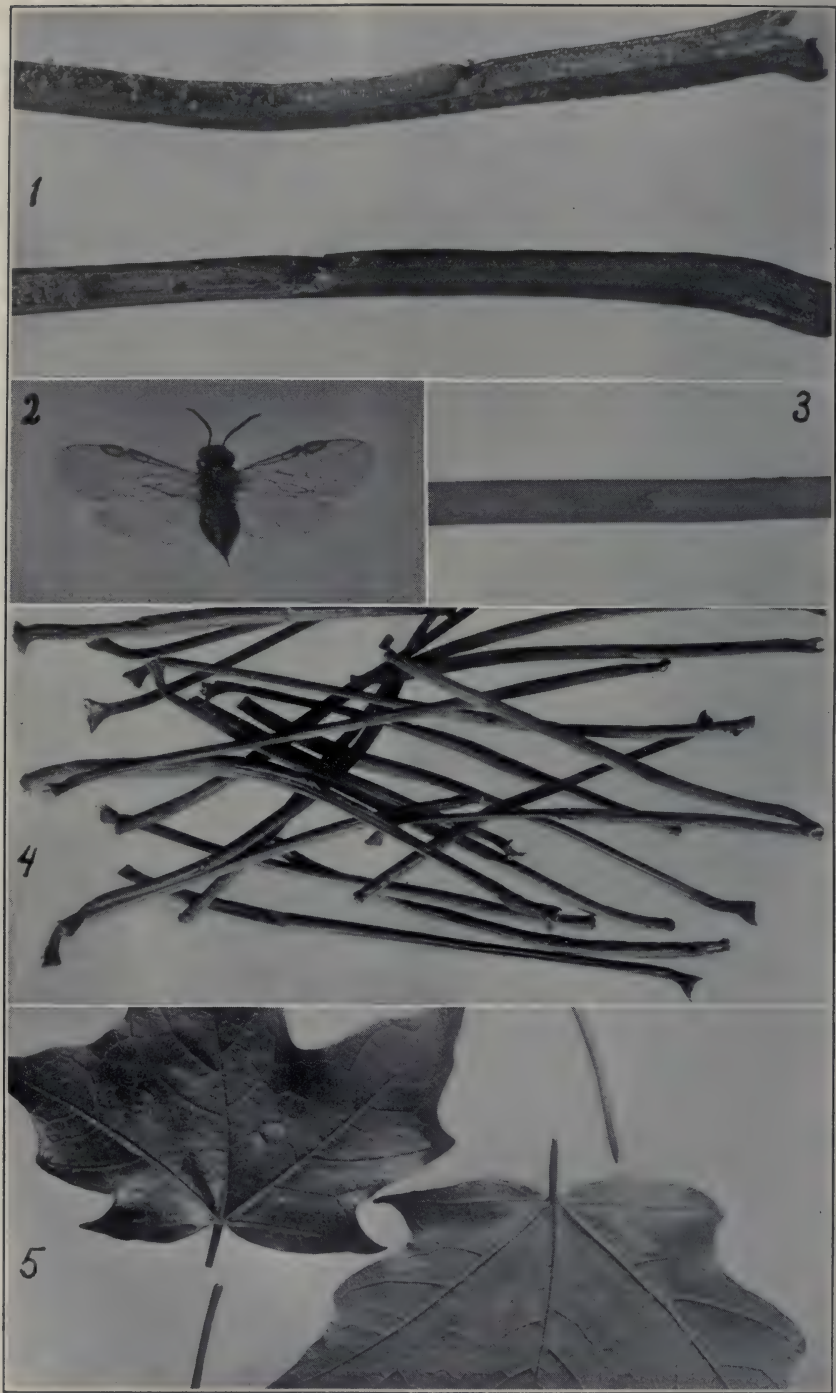
Mr. Schmitz, who had also received egg masses of the same species from Mr. Laurent on the same date, reported having first noticed the young on June 9, 1906, stating they ranged from about $\frac{5}{8}$ inch to $1\frac{1}{4}$ inches in length, the smaller ones being of a light chocolate hue, while the largest were a pale green, they seemed to be thriving, as they were observed at different times catching their food; from 15 to 20 specimens were seen scattered about.

Dr. Castle spoke of his trip with Mr. Daecke, May 27, 1906, to Forked River Mountains, N. J. They camped on the summit the first night; he stated that the hill is composed of sandstone, covered with gravel and large pebbles. The vegetation consists of pine, oak and the average vegetation usually found in pine barrens.

Mr. Harbeck stated that Dr. M. Swenk, of Nebraska University, had determined a lot of *Colletes* for him, and said that among them was a new species taken at Clementon, N. J.

Mr. Daecke mentioned some of the material collected on his trip with Dr. Castle on May 27, 1906, among which *Chrysops excitans* appeared, this species being new to the State; the same species was taken by Mr. H. W. Wenzel one week later at the same place. Continuing, the speaker said he had received *Chrysops sordidus* from Mr. Weidt, collected in the Orange Mountains last May, this species also being new to the State. Mr. Daecke further reported *Tephritis platyptera* from Merchantville, N. J., May 26, 1906, and Castle Rock, Pa., June 3, 1906.

Mr. H. W. Wenzel spoke of his recent trip to North Mountain, Pa., June 16, 1906, which is situated in the Allegheny Mountains. The speaker said where formerly the spruce was found, the lumbermen have completely denuded the mountains, not one spruce being left to tell the tale of the destruction of this virgin forest. The speaker exhibited some (about eighty) species of *Coleoptera* taken on this trip, a number of the species belonging to the Canadian fauna.



PRIOPHORUS ACERICAULIS MACGILLIVRAY.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

NOVEMBER, 1906.

No. 9.

CONTENTS:

Britton—The Maple Leaf-Stem Borer or Sawfly.....	313	Bergroth—A new genus of Lygaeidae from Japan	335
Osborn—The species of Cicada related to tibicen.....	321	Banks—Two new Termites.....	336
Slosson—Additional list of insects taken in alpine region of Mt. Washington	323	Moore—Notes on habits of Cicindela..	338
Sanderson—Texas Notes—II.....	327	Grabham—A new Corethrella from Ja- maica	343
Knaus—Coleoptera of the Sacramento Mts. of New Mexico—III.....	329	Editorial	346
Rehn—A new species of Proscopid (Acrididæ) from the Amazon Re- gion	332	Notes and News	347
		On the formation of an Entomological Society of America.....	352

The Maple Leaf-Stem Borer or Sawfly.

Priophorus acericaulis MacGillivray.

A NEW ENEMY OF THE SUGAR MAPLE.

(Plate XIV)

By W. E. BRITTON.

HISTORY IN CONNECTICUT.

For the past seven years sugar maples in certain localities in Connecticut have been attacked by some insect which tunnels in the leaf stem or petiole during the month of May. The matter was first brought to my attention June 3d, 1899, by the following letter from Mr. W. S. White, of Danbury: "I enclose some leaf stems from a sugar maple in my front yard. In these stems is a small worm which, when matured, is about one-half inch long. . . . At first, about four or five years ago, they were confined to one tree; now they have gone to all the surrounding maples. They seem now to be confined to this one locality. People about here are considerably disturbed about it, as it seems now like a serious matter. I can hear of nothing like it from any other quarter. Destroying the foliage at this time of the year, will it sooner or later kill the trees, and is there any way of destroying the worm or insect? Is it found in other

sections, and what is its name? Something should be done, and done quickly."

The specimens received consisted of injured stems, the insects not being present. Not being familiar with this form of injury to the maple, the literature of economic entomology was searched without finding descriptions of the damage or the insect causing it. This was stated in replying to Mr. White's letter, and he was requested to send more material, and if possible to send stems containing living larvæ, so that we might rear the adults. Under date of June 13th Mr. White wrote as follows:

"At your request I send you more stems and worms in a box containing soil in which they have buried themselves. They are now falling from the trees, and they soon disappear in the ground, where I have reason to believe they remain in a chrysalis state until another spring, when they come up to do their destructive work, by laying their eggs in the stem of the young and tender leaf. . . . If these pests increase as they have done for two or three years past, the early foliage will be destroyed, and I am afraid the trees likewise. It certainly is a new thing in these parts. Perhaps nothing can be done until the habits of the insect are determined."

The material contained one living larvæ in a stem, others in the stem having been crushed. In the soil there were thirty larvæ, only five of which were alive. The soil was a trifle too wet, and they had died in transit. The others soon died.

No observations were made in 1900, but early in June, 1901, I noticed that maple trees along the east side of Whitney Avenue, New Haven, between Sachem and Humphrey Streets, were attacked by this insect. I made several trips to these trees, and gathered fallen leaves and stems, the latter containing a number of larvæ. These were placed in a glass dish filled with sand, which had previously been sterilized by heating. The larvæ at once went into the sand, which was only two inches deep, and at the bottom made little cells as if to pupate. When examined, a few days later, all had died without having really transformed to pupæ.

The same year Mr. Thomas G. Bennett, of Prospect Street,

reported that his maple trees were being defoliated by some insect which, from his description of the injury, was probably the same pest.

During the seasons of 1902 and 1903 stems were gathered and placed in breeding cages, but all larvæ failed to transform. In 1904 material was scarce. A few fallen stems were placed in a box having fine wire netting top and bottom. This was filled with sterilized soil, the stems laid upon the surface of the soil, and the box buried level with the ground in a shady spot in a group of shrubbery. Before planting the cage, one parasite emerged. When the box was unearthed in 1905 no living insects came from it.

In 1905 we continued our observations on the Whitney Avenue trees, and it was noticed that the stems falling to the ground were often found empty or with parasitized borers in them. Some of the larvæ had evidently died before reaching maturity, as the burrow was abnormally small or only partially excavated. One stem had a hymenopterous cocoon in the burrow. Another contained a dipterous larva, feeding upon the borer. Some of the stems, however, showed the exit holes where the adults had emerged. It was suggested that all stems dropping early might be either diseased or parasitized. We therefore climbed the trees and gathered stems which had not fallen. In these stems we found larvæ that seemed to be vigorous and healthy. Two cages like the one used in 1904, and measuring $6\frac{1}{2} \times 4$ inches inside and 3 inches deep, were buried in the soil June 20th, 1905, immediately after placing the infested stems in them. The cages were dug up May 3d, 1906, and contained a number of adult sawflies which had already emerged from their cocoons, although the leaves of the sugar maples were but just unfolding.

In 1905, Dr. Francis Bacon, of 32 High Street, New Haven, reported that some insect was defoliating his trees. My assistant, Mr. Walden, examined the trees and found the same insect at work on them, and a large proportion of the leaves had fallen and covered the ground.

Under date of May 14th, 1906, in response to a letter of inquiry from me, Mr. White wrote that the insect was on the

increase in Danbury, and that he noticed it last year about one-half mile distant from the infested tree first noticed.

From letters of May 28th and 30th, from Hamden and Hartford, this insect is apparently causing the leaves to drop from maple trees in these localities. Mr. C. D. Jarvis, of Storrs, Conn., informs me that he has observed in Canada an injury to maples, presumably caused by this insect. I have observed its work on many of the streets of New Haven, in Westville, and in Stonington. Mr. Walden reports it from Southington. Thus it seems to be on the increase in Connecticut, and in a few years will perhaps be generally found attacking the sugar maple.

CHARACTERISTIC INJURY.

The leaves begin to fall late in May or early in June, May 27th being the earliest date on which I have observed them falling in noticeable numbers. It is only the blades that fall; most of these have a piece of stem from one-fourth to one-half of an inch long, being eaten nearly off at this point. The remaining portion of the stem or petiole remains upon the tree, and is not shed until ten days or two weeks later, when it ripens at the base and falls to the ground. In the worst cases that have come under our observation about one-third of the leaves have dropped from the tree, and this is the proportion mentioned by Mr. White in his letter.

The larva tunnels in the stem, and as it approaches maturity eats out the entire inside, leaving the cylindrical epidermal layer. The burrow is packed with the particles of woody material which the larva has eaten and voided. This is often packed so closely that the stem keeps its shape or may be somewhat swollen on account of it, though it is lacking in strength. On small maple trees in the insectary, which were attacked by the adults, collected and reared, the leaf blades wilted slightly and drooped before breaking off; but the severing point could be seen distinctly as a line around the stem where the larva had eaten it nearly off. Below this line the stem was fresh; above it both stem and leaf blade wilted and drooped. In one case the blade did not drop, but still remained

on the tree, but out of doors and exposed to the winds all infested leaves fall. A storm on May 28th, 1906, caused a great many leaves to fall from the maple trees, and most of them were cut nearly off by this stem borer.

Either before or after the petioles fall to the ground, the larvæ eat their way out, leaving small circular holes in the stems, usually near the middle. These holes may be seen in the accompanying illustrations.

LIFE HISTORY OF THE INSECT.

The eggs are laid by the females about the first week in May, but it is believed that oviposition may be kept up for some time. The eggs soon hatch, but it is not known how long a time is required. The larvæ tunnel in the stems for about one month, causing the leaf blades to fall in about three weeks and the stems to drop from ten days to two weeks later. On or before the dropping of the stems the larvæ go into the ground and make cells in which they pass the pupa stage. Our cages were three inches deep, and the pupa cases were found at the bottom. It is not known whether the pupa stage is assumed at once or not until the following spring. Adults emerge about May 1st, and soon begin to lay eggs.

The difficulty encountered in rearing the adults of this species, and their great mortality in the breeding cages, show the insect to be extremely delicate after passing the larval stage.

WHERE THE EGGS ARE LAID.

The eggs are laid at the distal end of the stem or base of the blade, at the point where the chief veins branch from the stem. The process of egg laying has been observed, and the scars may be found on many of the leaves. It seems strange that the egg should be deposited in a portion of the host plant, which is later severed from the burrow containing the larva. Nineteen eggs were found in the abdomen of the female examined.

FOOD PLANTS.

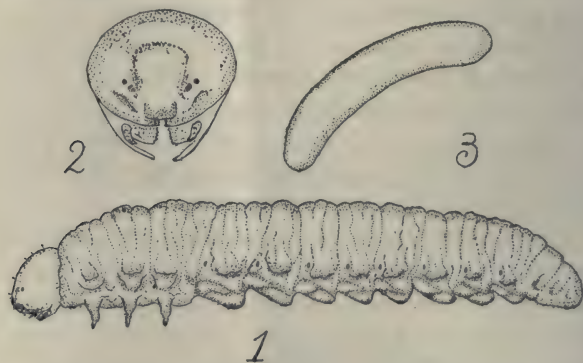
The insect has been observed as attacking the leaf stems of the sugar, Norway and sycamore maples. From time to time

we have examined red and silver maples, but have not found them attacked. The sugar maple is by far the most important host.

DESCRIPTION.

Egg.—The egg is colorless, more than five times as long as thick (length 975 μ . or about 1 mm.; thickness 186 μ), falcate or curved, with ends rather blunt and rounded. One end is slightly thicker than the other, but the egg is nearly uniform in thickness, and is shown in Fig. 3.

Larva.—The larva, when full-grown, is about 8 mm. or one-third of an inch in length and about 1.5 mm. or one-sixteenth of an inch in thickness. Head dark-yellow or light-brown, with mandibles black or dark-brown. Body and legs uniformly buff or straw-yellow, lighter than the head. Spiracles dark. See Fig. 1.



EGG AND LARVA OF MAPLE LEAF-STEM BORER.

1. Full grown larva. 2. Head of same. 3. Egg. All greatly enlarged.

Pupa.—The pupa case is an earthen cell about 5 mm. long, and greatly resembling that of the common currant worm.

Adult.—Female; length from front of head to tip of abdomen, 4 mm. Tip of antennæ to tip of abdomen, 6 mm. From tip to tip of forewings, 10 mm.

Head and thorax shining black above. Antennæ black. Abdomen and under side of thorax, including legs, honey-yellow. Tip of abdomen dark.

The male is unknown.

IDENTITY OF THE INSECT.

Previous to May 3d, 1906, I expected that the adult of the maple leaf stem borer would prove to be either a beetle or a small moth,—probably a beetle,—and this expectation was shared by Prof. J. B. Smith, who has evidently observed the same insect in New Jersey, for he writes:* “A small lot of leaves sent in at my request showed what was, apparently, a small coleopterous or beetle larva, boring in the leaf stalk From the observations made, it seems that the parent, which is assumed to be a curculio or snout beetle, gnaws into the stalks of the most vigorous leaves at a little beyond the middle, and there lays an egg.”

That it might be a small moth or lepidopterous larva I was led to believe, not only from its structure, but on account of the fact that many of the microlepidoptera are leaf miners, and that two of them, *Proteoteras aesculana* Riley and *Steganoptycha clavpoliana* Riley, are borers in the stems of the compound leaves of the horse chestnut, the latter having been recorded as attacking the maple by Dr. J. A. Lintner.†

The large number of sawflies obtained soon removed any doubts as to the insect causing the injury, and observations of egg-laying have confirmed the proof.

Specimens were sent to Dr. Alexander D. MacGillivray, of Cornell University, who reported it as a new species belonging to the genus *Priophorus*. Dr. MacGillivray has recently described this species under the name of *P. acericaulis*.‡

LITERATURE.

This insect seems to have attracted little attention, and very little has been written about it. At a meeting of the New York Entomological Society, June 4th, 1895, Rev. J. L. Zabriskie stated that the stems of maple leaves at Flatbush, Long Island, were injured by some insect which caused them to fall.§ The species was not identified, and may have been our *Priophorus*,

*Report New Jersey Agr. Expt. Station for 1901, p. 481.

†Twelfth Report New York State Entomologist, 1896, p. 214.

‡Canadian Entomologist, Vol. 38, p. 305, 1906.

§Journal N. Y. Entomological Society, Vol. III, p. 144.

but Dr. Lintner considered it to be the work of *Steganoptycha claypoliana*, which he reported as attacking maples in Pennsylvania, from specimens sent to *The Country Gentleman* in 1895.[†] From the account of the correspondent I should pronounce the injury that of the maple leaf stem borer or sawfly, but if Dr. Lintner really obtained the adult and found it a moth, the report must be accepted as authentic.

In corresponding about the matter, Dr. E. P. Felt states that he finds no records or specimens in the New York State Museum, which indicate that adults were actually reared from the leaves by Dr. Lintner.

It is quite certain that Prof. J. B. Smith observed the same insect in New Jersey in 1901,[‡] or two years after it was first noticed in Connecticut, but had not been able to obtain the adults in 1903.[§]

PARASITES.

It has been mentioned that parasites were reared from this sawfly. Several specimens of *Anoplus canadensis* Ashm. were obtained from the breeding cages. At first these were thought to be parasitic upon the sawfly, but as the insects of this genus parasitize diptera only, so far as is known, they may have attacked a dipterous parasite of the *Priorphorus*. A dipterous larva was noticed, and doubtless many more occurred in the material. A chalcidid parasite resembling *Pteromalus* was reared from the breeding cages, one specimen only being obtained.

REMEDIES.

No experiments have been made with remedies against this insect, but a knowledge of its life history enables one to suggest a possible treatment. Spraying the ground under the tree with kerosene emulsion about June 15th, when the insects are going into the soil, will doubtless destroy the larvæ; or if the land be not in turf, cultivation of the ground at this time is certain to kill many of them. As the insect is so hard to rear, there should be no difficulty in controlling it.

[†]Twelfth Report N. Y. State Entomologist, p. 214.

[‡]Report N. J. Agr. Expt. Station for 1901, p. 481.

[§]Report N. J. Agr. Exp. Station for 1903, p. 557.

I here wish to give due credit to my assistant, Mr. B. H. Walden, who has assisted in gathering material and in caring for the breeding cages. The photographs Nos. 1, 2 and 3 of the plate were also made by Mr. Walden.

DESCRIPTION OF PLATE XIV.

1. Longitudinal section of maple leaf stem, showing larva in burrow, and empty burrow partly filled with castings. Greatly enlarged.
 2. *Priophorus acericaulis* MacGillivray. Adult female. About three times natural size.
 3. Leaf stem showing exit hole of larva.
 4. Stems which have dropped from the tree.
 5. Leaves with stems severed by the borer.
-

The Species of *Cicada* related to *tibicen*.

BY HERBERT OSBORN.

The September number of ENTOMOLOGICAL NEWS contains an interesting article by Messrs. Davis and Joutel on *Cicada tibicen* and allied forms, and I can cordially agree with the authors in their conclusion regarding the separation of the three forms and also agree that they are probably correct in placing the names as they do, though it is a difficult matter to determine just what Say had in hand for the description of *pruinosa*. The authors, however, seem to have overlooked two papers in which the separation of these species has been definitely indicated. The first article is by Professor P. R. Uhler, in the Maryland Academy of Science, Volume "1," page 151, where *canicularis* Harris is definitely separated from *tibicen*, but in which *pruinosa* is still retained as a synonym of *tibicen*. The other paper is by Professor H. Garman, in bulletin 107, Kentucky Experiment Station, entitled "17-Year Locusts in Kentucky," and in which he includes reference to *tibicen*, page 89, and *pruinosa*, page 91, definitely separating these forms and giving full details of characters by which to differentiate them. He also gives photographic figures illustrating both species. Both of these papers it must be admitted are rather inaccessible and easily overlooked, but the former is referred to and closely followed in Prof. MacGillivray's article on

"Cicadidæ-American genera and species," Canadian Entomologist, volume 33, page 74 (1901).

I have had these forms separated in my collection for several years and have representatives of the species from several different localities, *tibicen* having a somewhat wider range, but examples of *canicularis* from Ohio and of *pruinosa* from Ohio and District of Columbia.

In this connection I may call attention to another form which is closely related to *tibicen*, and may very likely have been confused with it, although it seems to be of rather rare occurrence. The only specimens of which I know are from Ohio and Indiana, and what is probably the male, from Florida. I have described it in a forthcoming paper on the Homoptera of Ohio, but the following diagnosis may be presented in this connection:

***Cicada fulvula* n. sp.**

Size and form of *tibicen* and closely resembles that species, but the coloration of thorax is different, the light part being fulvous and the hind border of prothorax black. Length of female, 32 mm.; to tip of wing, 51 mm. Male, 32 mm.; to tip of wing, 50 mm.

Head black with narrow tawny stripe on middle of vertex. Front black proboscis fulvous; prothorax black and greenish fulvous, the fulvous occupying a central patch in discal portions of each side. The broad hind border and narrower lateral border black. Mesothorax fulvous and black, the black occupying the central area and irregular lines at margin. The elytra transparent, faintly smoky, veins at base green, on apical portion black. Abdomen black above, with narrow pruinose line at base. Beneath with broad central polished black stripe and at each side is a broad lateral pruinose border. Legs greenish or olivaceous fulvous. The last ventral segment of female is broadly "V"-shaped.

In what appears to be the male of this species the opercula are of very different shape from those of *tibicen* or *pruinosa*, being rounded or elliptical posteriorly and with a distinct reflexed border, highly polished, length, 9 mm., width, 6mm., distinctly overlapping on inner margin.

MR. J. A. G. REHN, the well-known orthopterist, was married to Miss Dorothy D. Holman of West Creek, N. J., on October 24th.

Additional List of Insects Taken in Alpine Region of Mt. Washington.

BY ANNIE TRUMBULL SLOSSON.

In 1894 I printed my first list of this series. Since that time I have published eight additional lists, nine in all, and herewith append my tenth. This one includes the insects taken by me during summers of 1905 and 1906 and contains about 200 species, many of them new to science, as are also two or three genera. As usual I have depended much upon specialists in the different groups for identifications and have received very kind and cheerfully-given assistance from all.

LEPIDOPTERA.

HETEROCERA.

- Catocala unijuga* *Walk.*
Olethreutes coruscana *Clem.*
 " *fuscalbana* *Zell.*
Epinotia pinicolana *Zell.*
Alceris hastiana *Linn.*
Tortrix argentana *Clerck.*
Platynota sentana *Clem.*
Phalonia vitellinana *Zell.*
Gelechia vernella *Murtf.*
Mompha ? sp ?
Micropteryx griseocostella ? *Walsm.*

HYMENOPTERA.

BOMBIDÆ.

- Bombus vagus* *Sm.*

PROSOPIDIDÆ.

- Prosopis affinis* *Sm.*

EUMENIDÆ.

- Ancistrocerus tigris* *Sauss.*

BELYTIDÆ.

- Psilomma slossonæ* *Ashm.* n. sp.

DIAPRIIDÆ.

- Trichopria alticola* *Ashm.* n. sp.

SCALIONIDÆ.

- Hoplogryon washingtonensis*
Ashm. n. sp.

PLATYGASTERIDÆ.

- Polymecus slossonæ* *Ashm.* n. sp.

FIGITIDÆ.

- Aegilips monticola* *Ashm.* n. sp.
Anacharis slossonæ *Ashm.* s. np.

TORYMIDÆ.

- Syntomosia politæ* *Ashm.* n. sp.
Torymus bedeguaris *Linn.*

MISCOGASTERIDÆ.

- Lamprotatus monticola* *Ashm.* n. sp.

CLEONYMIDÆ.

- Mesostenus monticola* *Ashm.* n. sp.

ENCYRTIDÆ.

- Cerchysius maculipennis* *Ashm.*
Blastothrix sericeus *Dalm.*
Encyrtid gen. ? sp.

PTEROMALIDÆ.

- Asaphes vulgaris* *Walk.*

EULOPHIDÆ.

- Aphelinus bicolor* *Ashm.* n. sp.
Sympiesis sp. ?

ICHNEUMONIDÆ.

- Ichneumon jucundus* *Brulle*.
Melophron abdominalis *Ashm.*
 n. sp.
Bathymetis slossonæ *Ashm.* n. sp.
Bathymetis washingtonensis *Ashm.*
Adiostola testaceipes *Ashm.* n. sp.
Ichyracis americana *Ashm.* n. sp.
Stibioscopus washingtonensis
Ashm. n. sp.
Pimpline n. gen. et n. sp.
Ephialteas sp. ?
Ephialtomorpha slossonæ *Ashm.*
 n. gen. et n. sp.
Eriglæa longitarsis *Ashm.* n. sp.
Promethes albicoxis *Ashm.* n. sp.
Triclastus pygmæus *Cr.*
Amerolytus flavifrons *Ashm.*
Orthocentrus canadensis *Prov.*
Hypolepus alticola *Ashm.*
Deleter washingtonensis *Ashm.*
 n. sp.
Phcenosemus alticola *Ashm.* n. sp.
Atmetus pectoralis *Ashm.* n. sp.
Zaporus alticola *Ashm.* n. sp.
Barycnemis slossonæ *Ashm.* n. sp.

ALYSIIDÆ.

- Mesocrina* sp.

BRACONIDÆ.

- Aphidius phorodontis* *Ashm.*
Lysiphlebus slossonæ *Ashm.* n. sp.
Macrocentrus rufopleuralis *Ashm.*
 n. sp.
Urogaster carniæ *Ashm.*
Glyptapanteles alticola *Ashm.* n. sp.
Habrobracon pampeliæ *Ashm.*

FORMICIDÆ.

- Camponotus herculeanus ligniper-*
du *Latr.* var. *pictus* *Forel.*
Formica sanguinea aserva *Forel.*
Formica fusca subpolita var. *neoga-*
gates *Emery.*

- Lasius niger* *Linn.* var. *americanus*
Emery.
Lasius umbratus mixtus *Nyl.* var.
aphidicola *Walsh.*
Dolichoderus taschenbergi var.
gagates *Wheeler.*
Leptothorax acerverum canadensis
Prov.
Leptothorax emersoni *Wheeler.*
Myrmica rubra scabrinodis *Nyl.*
Myrmica rubra scabrinodis *Nyl.*,
 var. *schenki* *Mein.*

COLEOPTERA.

CARABIDÆ.

- Cychrus lecontei* *Dej.*
Amara polita *Lec.*
 " *similis* *Kirby.*
Bembidium nitidum *Kirby.*
Bradycellus rupestris *Say.*

DYTISCIDÆ.

- Agabus obtusatus* *Say.*
Copelatus glyphicus *Say.*

HYDROPHILIDÆ.

- Laccobius agilis* *Rand.*

SILPHIDÆ.

- Anistoma collaris* *Lec.*
 " *strigata* ?

STAPHYLINIDÆ.

- Aleochara fuscipes* *Grav.*
Tachinus repandus *Horn.*
Philonthus quadricollis *Horn.*
 " ?
Syntomium confragosum *Makl.*
Arpedium sp.
Micropeplus tesserula *Curt.*

COCCINELLIDÆ.

- Mysia pullata* *Say.*

CUCUJIDÆ.

- Laemophlacus convexulus* *Lec.*

CRYPTOPHAGIDÆ.

Cœnoscelis sp.

" "

" "

Crosfmus hirtus *Casey*.

Cryptophagus sp.

MYCETOPHAGIDÆ.

Litargus 6-punctatus *Say*.Typhœa fumata *Linn*.

DERMESTIDÆ.

Trogoderma tarsale *Melsh*.Dermestes vulpinus *Fab*.

NITIDULIDÆ.

Stelidota geminata *Say*.Rhizophagus brunneus *Horn*.

LATRIDIIDÆ.

Corticaria ferruginea *Gyll*.Latridius breviclavus *Fall*.

PARNIDÆ.

Dryops striatus *Lec*.

DASCYLLIDÆ.

Ptilodactyla serricollis *Say*.

ELATERIDÆ.

Corymbites metallicus *Payk*.

LAMPYRIDÆ.

Podabrus piniphilus *Esch*.Telephorus fraxini *Say*.Malthodes niger *Lec*.Ditemnus bidentatus *Say*.

PTINIDÆ.

Cœnocara sp.

Dinoderus substriatus *Payk*.

SCARABÆIDÆ.

Odontæus cornigerus *Melsh*.

CERAMBYCIDÆ.

Leptura nigrella *Say*.

CHRYSOMEIDÆ.

Donacia æqualis *Say*.Phyllotreta vittata *Fab*.Diabrotica 12-punctata *Oliv*.Haltica torquata *Lec*.

TENEBRIONIDÆ.

Xylopinus saperdioides *Oliv*.

MELANDRYIDÆ.

Serropalpus striatus *Helw*.

CEPHALOIDÆ.

Cephaloon unguare *Lec*.

MORDELLIDÆ.

Mordella borealis *Lec*.

ANTHICIDÆ.

Anthicus floralis *Linn*.

MELOIDÆ.

Epicauta pennsylvanica *DeG*.

RHINOMACERIDÆ.

Rhinomacer elongatus *Lec*.

CURCULIONIDÆ.

Phytonomus nigrirostris *Fab*.Hylobius pales *Hbst*.Dorytomus brevicollis *Lec*.Elleschus scanicus *Payk*.Centrinus denticornis *Casey*.

SCOLYTIDÆ.

Pityophthorus sparsus *Lec*.Xyleborus cælatus *Eich*.Hylesinus aculeatus *Say*.

DIPTERA.

Bibio longipes *Loew*.Culex sylvestris *Theo*.Chasmatonotus bimaculatus *O. S*.Ceratopogon specularis *Coq*.Camptocladius minimus *Meig*.Tipula sarta *Loew*.

Psychoda slossoni Will.
Hemerodromia superstitiosa Say.
Leucostola slossonæ John. n. sp.
Dolichopus acuminatus Loew.
Pelastoneura vagans Loew.
Sympycnus lineatus Loew.
Chrysotus sp. ?
Hydrophorus parvus Loew.
 " *pirata Loew.*
Lonchoptera lacustris Meig.
Syrphus ribesii Linn.
Helophilus glacialis Loew.
Neoascia distincta Will.
Caricea antica Walk.
Cœnosia nana Zett.
 " *n. sp. ?*
Cordylura lutea Loew.
Tephronota narytia Walk.
Urellia solaris Loew.
Sapromyza 4-lineata Loew.
Psilopa similis Cog.
Hydrellia hypoleuca Loew.
Hydrina picta Fall.
 " *debilis Loew.*
Drosophila imersa Walk.
Scaptomyza adusta Loew.
Siphonella cinerea Loew.
Chlorops sp. ?
Oscinis carbonaria Loew.
Agromyza longipennis Loew.

HEMIPTERA.

HETEROPTERA.

Euschistus variolaris P. B.
 " *tristigmus Say.*
 " *fissilis Uhl.*
Belonichilus numenius Say.
Geocoris griseus Dall.
Crophius n. sp.
Pamera n. sp.
Ptochiomera n. sp.
Ligyrocoris constrictus Say.
Trapezonatus rufipes Stal.
Trapezonatus n. sp.
Spragisticus nebulosus Fall.
Drymus (Megalonotus) n. sp.
Rhyparochromus compactus Uhl.
Lygus n. sp.
Lygus belfragii Reut.
Camptobrochis n. sp.

Pycnoderus insignis Rent.
Neoborus n. sp. ?
Capsid n. gen. n. sp.
Ilacora n. sp.
Mecomma sp. ?
Dicyphus californicus Stal.
 " *vestitus Uhl.*
Plagiognathus sp. ?
Capsid n. gen. n. sp.
Tetraphelps n. sp.
Xylocoris americanus Dall.

HOMOPTERA.

Cyrtolobus vau Say.
Alymna castanea Fitch.
 " *querci Fitch.*
Ophiderma flavoguttata Gvdg.
Telamona monticola Fab.
Liburnia pellucida Fab.
 " *lutulenta V. D.*
 " *sp. ?*
 " *n. sp. ?*
Stenocranus dorsalis Fitch.
Helicoptera sp.
Philænus spumarius pustulatus Fall.
Clastoptera obtusa Say.
Idiocerus productus G. & B.
 " *formosus Ball.*
 " *suturalis var. vagus Ball.*
Acocephalus albifrons Linn.
Deltocephalus minki Fieb.
Platymetopius acutus Say.
Strongylocephalus agrestis Fall.
Chlorotettix lusoria O. & B.
Typhlocyba nitidula Fab.

NEUROPTERA.

Aeschna juncea Linn.
Psocus confraternus Bks.
 " *mæstus Hag.*
Mesopsocus unipunctatus Muell.
Peripsocus madidus Hag.
Hemerobius humili Linn.
Boriomyia longifrons Walk.
Limnephilus dispectus Walk.
Heteropteron boreale Prov.

ARACHNIDA.

Erigone dentigera Cambr.
Thanatus n. sp.

Texas Notes.—II.

By E. DWIGHT SANDERSON.

The English Grain Louse.

Macrosiphum granaria Buckton.

This species was found common in the grain fields of north and central Texas. The species was first sent us from North Texas, January 20, 1903, where it had been mistaken for the southern grain louse (*Toxoptera graminum*), other specimens were similarly received during February and March.

Colonies were started in tubes in the laboratory January 21, 1903, and progeny from them were maintained until about May 1st. Conditions were hardly favorable for the maximum reproduction in the tubes, but ten females whose record was kept produced an average of 31 young each in 17.4 days, or an average of 1.7 each per day. All of these females were winged but two, whose rate averaged 2.2 young per day. The time required for the development of the individual was observed in fifteen cases and was found to average 12 days, ranging from 8 to 17 days.

Young born January 20, matured and reproduced February 3, which reproduced February 11, which young reproduced March 2, which became mature March 17 and bore young of record March 31, which became mature and reproduced young April 15, which became adult April 26. Thus, there were six generations in 96 days, the young of one generation not having been isolated until 15 days after reproduction commenced, so that the minimum time for the six generations would have been about 80 days.

Of the young born March 31, part developed into the winged males and apterous oviparous females, while others became viviparous females, which gave birth to young which became sexual. The young stages of the sexual individuals were noticeably pinkish in contrast to the usual yellowish-green. The sexes differ from the viviparous form in the usual manner.

Apterous oviparous female.

One specimen, 1.9 mm. long by 1 mm. wide; antennæ 2 mm., segments, 3, 0.50 mm.; 4, 0.35 mm.; 5, 0.30 mm.; 6, 0.10 mm.; 7, 0.50 mm.;

cornicle, 0.43 mm.; cauda, 0.21 mm. Somewhat smaller than viviparous form. At first yellow, then turning green and darker green. Head light brown. Distal two-thirds of femora, tip of tibia, tarsi and cornicles black, antennæ black. Conspicuous horizontal black marking in pit of connexivum on either side, these being more or less connected by black lines on the sutures of the first six abdominal segments and coalescing to form a faint but distinct black spot on abdominal segments 4-6. Meta-tibia with numerous pores.

Winged male.—Antennæ, 2.8 mm.; segments, 3, 0.68 mm.; 4, 0.50 mm.; 5, 0.46 mm.; 6, 0.14 mm.; 7, 0.78 mm.; cornicle, 0.14 mm.; cauda, 0.14 mm.; wing 3.35 mm. long. The third antennal segment with 35 to 50 sensoria, the fourth segment with a row of 10 to 12 on basal two-thirds, about 10 large sensoria on distal two-thirds of fifth segment, and usual large sensoria at tip of sixth and seventh segments. Similar to winged viviparous female, but reddish to reddish-brown, with black markings on either side of dorso-meson of abdominal segments, especially on the seventh segment where the marking converges on the meson.

The sexual forms were not found in the field nor were we able to secure them from viviparous females in May. Whether this is the normal time for the appearance of the sexes in Texas, and where they occur in nature, or whether their appearance was due to the rearing in confinement for several generations, are open questions. We know of no previous record of the sexes, though Prof. F. M. Webster informs us that he secured them many years ago.

Mr. Th. Pergande has given very complete descriptions of the viviparous forms (Bulletin 44, Division of Entomology, U. S. Dept. Agr., pg. 14). Mr. C. E. Sanborn has kindly drawn up a description of the form common in Texas. Seemingly the only difference between this species and *Macrosiphum cereal*is Kalt. is in the latter species lacking the black markings of the abdomen of the former. The sizes as given by Pergande are so variable that it would be impossible to distinguish the species by size. Unfortunately, when specimens are mounted in balsam, it is sometimes extremely difficult to distinguish the black maculations on the abdomen. Specimens should therefore always be described as to color before mounting or preserving. Some further distinction for mounted specimens is therefore a desideratum, as unfortunately the two species have been inextricably confused in the economic literature of this country and will probably continue to be unless clearly distinguished.

Coleoptera of the Sacramento Mountains of New Mexico.—III.

By W. KNAUS, McPherson, Kansas.

June 12 to 18, 1905, were spent in collecting Coleoptera at or near Cloudcroft, New Mexico. Of this time a part of a day was spent at Alamogordo, at the foot of the Sacramento Mountains, and one day at Santa Rosa, at the crossing of the Pecos River. I had collected over the same region in 1902; and at the same season, but of the seventy species here listed, at least sixty-five of them did not occur or were not seen at the time covered by these dates.

Of the species here listed, seventeen are new to New Mexico. Fourteen are new to southern New Mexico, five genera are new to the territory and one family is also new to the territory.

Most of the species have been identified by Mr. H. C. Fall, of Pasadena, Cal., to whom thanks are due. The localities for species other than Cloudcroft, Wootens, Alamogordo, Conant and Santa Rosa should be credited to the "Coleoptera of New Mexico," unpublished, by Messrs. H. C. Fall and T. D. A. Cockerell, the latter gentleman having kindly given the localities.

- 1 20 *Cicindela nigrocaerulea* Lec. On flats east of Alamogordo, along streams from overflow of irrigation ditch. In numbers, varying from the typical blue-black through various shades of green to black. Also known from Deming and Luna.
- 2 38 *Cicindela flavopunctata* Chevr. One specimen, same locality as above. New to New Mexico.
- 3 39 *Cicindela tenuisignata* Lec. Common, same locality as above. Also from Mesilla Park.
- 4 — *Dyschirius* sp. One specimen, Cloudcroft.
- 5 936 *Pinacodera punctigera* Lec. One specimen, Cloudcroft, also from the Organ Mountains.
- 6 — *Tachycellus turbatus* Fall. Common in canons surrounding Cloudcroft.
- 7 1221 *Halyplus triopsis* Say. One specimen, Wootens, previously recorded from Albuquerque.
- 8 1297 *Coelambus nubilis* Lec. One specimen, Fresno Creek, also from Mesilla Valley.

- 9 1613 *Berosus infuscatus* Lec. One specimen, Alamogordo, also recorded from Roswell.
- 10 — *Homalota* sp. One specimen, Cloudcroft.
- 11 — *Staphylinus modestus* Fall. One specimen, Fresnal Canon near Cloudcroft.
- 12 2170 *Philonthus flavolimbatus* Erichson. One specimen, Cloudcroft. Recorded from numerous other localities.
- 13 2182 *Philonthus alumnus* Er. One female specimen, Cloudcroft. Also from Mesilla Park and Thornton.
- 14 9858 *Baeocera texana* Csy. Two specimens, Cloudcroft. New to New Mexico.
- 15 — *Neomedon* sp. Not described from United States. One specimen, Cloudcroft. Genus new to New Mexico.
- 16 — *Siagonum* sp. One specimen, Santa Rosa.
- 17 2980 *Scaphisoma castaneum* Mots. Two specimens, Cloudcroft. New to New Mexico.
- 18 9873 *Phalacrus sayi* Csy. One specimen, Wootens. New to southern New Mexico.
- 19 — *Eustilbus* sp. One specimen, Wootens.
- 20 3160 *Scymnus coniferarium* Cr. One specimen on young pine shoot, Cloudcroft. New to southern New Mexico.
- 21 3173 *Epilachna corrupta* Muls. Common, damaging potato vines and beans, near Wootens.
- 22 — *Agathengis* sp. One specimen, Wootens.
- 23 3466 *Hister subopacus* Lec. One specimen under pine bark, Cloudcroft. New to New Mexico.
- 24 3497 *Hister militaris* Horn. Three specimens. Santa Rosa and Alamogordo. New to southern New Mexico.
- 25 3637 *Plegederus nitidus* var. Horn. Common in channels of *Scolytus* under pine bark, Cloudcroft. New to New Mexico.
- 26 3699 *Epuræ ambigua* Mann. One specimen at Cloudcroft. New to New Mexico.
- 27 3760 *Ips cylindricus* Lec. A broken specimen, Cloudcroft. New to New Mexico.
- 28 3833 *Trogosita virescens* Feb. One specimen, Wootens. New to southern New Mexico.
- 29 3848 *Peltis pippingskoeldi* Mann. One specimen, Cloudcroft. New to southern New Mexico.
- 30 3849 *Peltis ferruginea* Linn. Two specimens, Cloudcroft. New to New Mexico.
- 31 — *Melanotes* sp. One specimen, Cloudcroft.
- 32 4641 *Chrysobothrus cuprascens* Lec. One specimen, Cloudcroft. New to southern New Mexico.
- 33 — *Agrilus* sp. One specimen, Wootens.

- 34 4943 *Telephorus ruficollis* Lec. Four specimens, Cloudcroft and Wootens. New to southern New Mexico.
- 35 — *Coelestethus alternatus* Fall. Two specimens, Cloudcroft. Recorded from Wootens.
- 36 5430 *Canthon puncticollis* Lec. Two specimens, male and female, Alamogordo. Also from Deming and other points.
- 37 5458 *Onthophagus hecate* Panz. Alamogordo and Fresnal Canon. Also from Rio Ruidoso and other points.
- 37 5481 *Rhyssemus californicus* Horn. One specimen, Santa Rosa. New to New Mexico.
- 39 5533 *Aphodius lividus* Oliv. Common at Santa Rosa, occasionally found at Alamogordo and Wootens. Other records are Albuquerque and Thornton.
- 40 — *Aphodius* n. sp. near *crassulus* Horn. Common, Cloudcroft to Wootens.
- 41 10203 *Aphodius pumilus* Horn. Common at Alamogordo, also from Astex and Santa Fe.
- 42 — *Dichelonycha* n. sp. Occurs on scrub oak, young pines, wild roses and willows from Cloudcroft summit 9,200 feet down to Wootens 7,000 feet. New to New Mexico.
- 43 6240 *Toxotus trivittatus* var. Say. On scrub oak, Cloudcroft. New to New Mexico.
- 44 6273 *Acmaeops proteus* Kirby, var. Two specimens, Cloudcroft. New to southern New Mexico.
- 45 6332 *Leptura canadensis* Fab. var. One elytron under bark. Cloudcroft.
- 46 6655 *Pachybrachys morosus* Hald. Cloudcroft. New to southern New Mexico.
- 47 — *Pachybrachys morosus* Hald. var. Cloudcroft.
- 48 — *Pachybrachys* sp. near *lustrans* Lec. Cloudcroft.
- 49 6720 *Xanthonia io-notata* Say. On pines, Cloudcroft. New to southern New Mexico.
- 50 10370 *Colaspoidea viridimicans* Horn. Several specimens at Conant.
- 51 6915 *Monoxia puncticollis* Say. Four specimens, Santa Rosa, reported from Roswell and other points.
- 57 6918 *Monoxia sordida* Say. One specimen, Wootens. Also Mesilla Valley.
- 53 — *Monoxia* new sp. On heads of young balsam fir, Cloudcroft.
- 54 6962 *Halitica carinata* Germ. Wootens. New to southern New Mexico.
- 55 7046 *Chaetocnema subviridis* Lec. Several specimens, Santa Rosa. Also near Silver City.
- 56 — *Araeoschizus* sp. possibly *fimbratus* Csy. One specimen, Santa Rosa.
- 57 — *Embaphion* n. sp. Several specimens under pine bark and chips, Cloudcroft. New to New Mexico.

- 58 — *Conibius* n. sp. One specimen, Santa Rosa, Genus new to New Mexico.
- 59 7519 *Platydesma oregonensis* Lec. One specimen, Cloudcroft. New to southern New Mexico.
- 60 7704 *Mycterus concolor* Lec. Several specimens, Wootens. New to southern New Mexico.
- 61 7707 *Leontia discicollis* Lec. var. One specimen under pine bark, Cloudcroft. New to southern New Mexico.
- 62 7717 *Salpingus virescens* Lec. One specimen, Wootens. New to southern New Mexico.
- 63 — *Epicauta* n. sp. Four specimens, Wootens.
- 64 8198 *Rhinomacer comptus* Lec. One specimen, Cloudcroft. Family, genus and species new to New Mexico.
- 65 8342 *Sitones lineellus* Gyll. One specimen, Cloudcroft. New to New Mexico.
- 66 — *Apion disparipes* Fall. One female specimen, Wootens. Also from Las Cruces.
- 67 — *Macrops* sp. One specimen, Santa Rosa.
- 68 10923 *Smicronyx spretus* Dietz. One specimen, Wootens. New to New Mexico.
- 69 — *Sphenophorus* sp. One specimen, Santa Rosa.
- 70 9224 *Brachytarsus griseus* Lec. One specimen, Wootens. Genus and species new to New Mexico.

A New Species of Proscopid (Acrididae) from the Amazon Region.

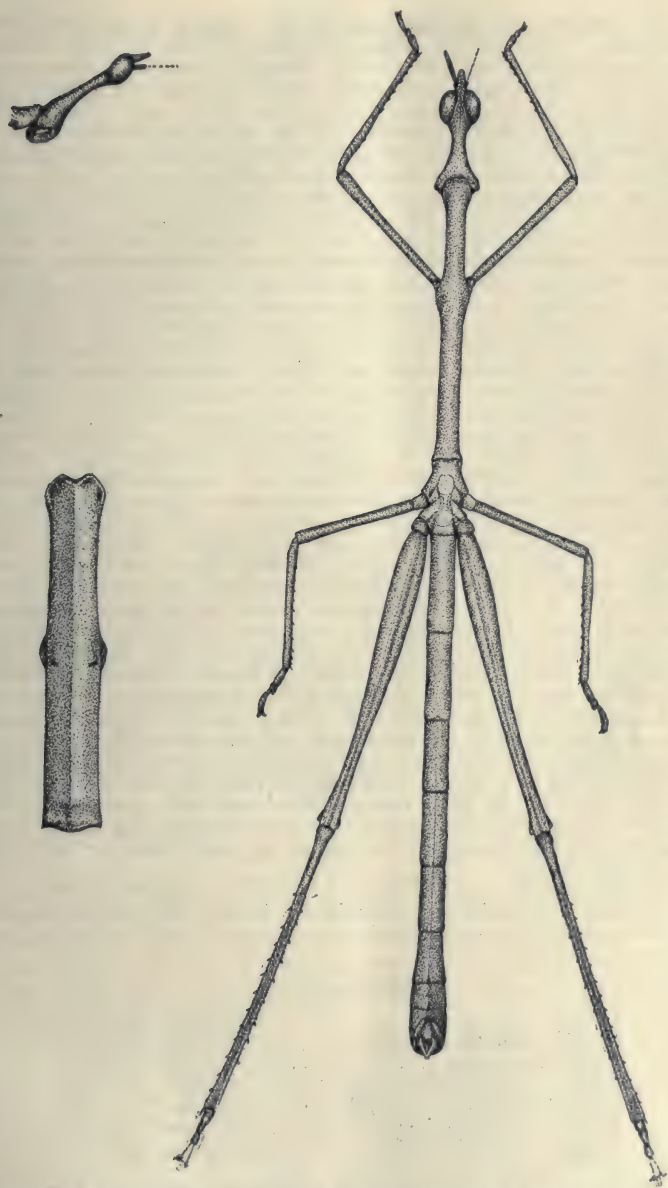
BY JAMES A. G. REHN.

Taxiarchus paraensis n. sp.

Types.—♂ and ♀; Obidos, State of Para, Amazonian Brazil. A. N. S. Philadelphia.

Allied to *T. superbus* Brunner from Upper Amazonia, but differing in the slenderer body, the very much longer and slenderer pronotum, the absence of distinct denticles on the mesopleura, which are somewhat constricted cephalad, and in the more subequal rostrum. From *T. septentrionalis* Bruner,* from Costa Rica, it differs in the slightly smaller general size and the much shorter limbs of the female, while the male has the pronotum longer than in the Costa Rican species, and the number of spines on the external margins of the caudal tibiae is at least four less than in *septentrionalis*.

*Ent. News, xvi, p. 314.



Taxiarchus paracensis n. sp.—Lateral view of head of male; dorsal view of female pronotum, and dorsal view of male. (X $1\frac{1}{2}$.)

Size rather large; cephalic and thoracic regions thickly but bluntly tuberculate. Head greatly prolonged, particularly in the male, the portion immediately caudad of the eyes strongly and roundly constricted in the male; the length considerably more than half the length of the prothorax in the female, very slightly more in the male; vertex in the male a quadrate peg-like process, shorter than the length of the eye, slightly tapering and with the apex truncate, in the female quadrate with the angles more acute, equal to the length of the eye, hardly tapering, the apex bluntly rounded; antennæ very short, about twice the length of the rostrum in the male, very slightly longer in the female; eyes very prominent in the male, ovate in outline when viewed laterad, approaching closer cephalad than caudad, in the female moderately prominent. Prothorax elongate, the greatest width (inter-coxal) contained nearly nine times in the length in the male and about five and a half times in the female, cylindrical in the male, somewhat depressed in the female; cephalic margin subtruncate mesad, slightly expanded laterad; caudal margin sinuato-truncate, very slightly expanded in the male and not appreciably so in the female; no median carina present in the male, a very blunt and low one present in the female, weak mesad; prosternum separated from the pronotum by a distinct sulcus, rounded in the male, tectate in the female with the central ridge bearing a slight shallow median sulcus; coxæ shielded cephalad by a rounded projecting plate, more prominent in the female than in the male. Mesothorax considerably depressed, the pronotal carina continued caudad on the mesonotum in the female; mesopleura tuberculate, not spined. Metathorax about equal to the mesothorax in width, somewhat depressed caudad in the female. Abdomen very considerably longer than the head and thorax, cylindrical in the male, with a median carina in the female; supra-anal plate of the male half ovate, cerci very short. Cephalic femora about half the length of the pronotum in both sexes, very slightly enlarged distad, tibiæ about equal to the femora in length. Median femora and tibiæ about equal in size and form to the cephalic in the female but more robust, in the male distinctly shorter than the cephalic. Caudal femora about equal to the prothorax and mesothorax in length, very slightly longer than the same segments in the female, slightly inflated in the proximal half, dorsal margin of the genicular region with a spine on each side; caudal tibiæ very slightly longer than the femora, subquadrate in section, slightly but distinctly arcuate, the outer dorsal margins with thirteen to sixteen spines, the inner dorsal margins with six to nine spines.

General color olivaceous brown, mixed with tawny-olive, particularly in the male and on the pronotum in the female. Eyes clove-brown in the male, of the general color in the female.

MEASUREMENTS. ♂ ♀

Length of body.....	84.5 mm.	129.5 mm.
Length of head (dorsal).....	10 mm.	16.5 mm.
Length of vertex	1.8 mm.	4 mm.
Length of prothorax	24.5 mm.	31 mm.
Length of meso and metathorax....	6.5 mm.	11 mm.
Length of caudal femur.....	27 mm.	39 mm.
Length of caudal tibia.....	27.5 mm.	41.5 mm.

The typical pair are the only specimens available for examination.

A new genus of Lygaeidae from Japan.

BY DR. E. BERGROTH, DULUTH, MINN.

Togo n. gen.

Body elongate. Head exserted, nearly as broad as long and broader than apex of pronotum, narrowing behind the eyes, postocular lateral margins as long as the eyes, which are of moderate size, a little prominent, obliquely oval seen in profile, ocelli twice as far separated from each other as from the eyes, tylus somewhat produced beyond the juga, the throat a little longitudinally convex, first antennal joint passing the apex of the head by half its length, first joint of rostrum not reaching the posterior margins of the eyes, second joint as long as first, passing the apex of the prosternum by about half its length (remaining joints not clearly seen, owing to specimen being carded). Pronotum constricted far behind the middle, anterior lobe nearly four times as long as posterior lobe, its sides broadly convex, rounded, almost imperceptibly carinated, collar distinct with a transverse row of punctures, posterior lobe with basal margin almost straight, lateral angles rounded, not prominent. Scutellum about as long as broad. Metasternum with acutely produced posterior angles. Hemelytra abbreviated, reaching a little beyond the middle of the penultimate abdominal segment, clavus with three rows of punctures, the external row straight and regular, the two inner rows somewhat irregular and confused, claval suture more than twice as long as the straight apical margin of the corium, claval commissure nearly as long as the scutellum, membrane very short, appearing as a rounded border to the apical margin of the cordium. Abdomen a trifle narrower than the hemelytra, the last dorsal segment in the male rounded at apex and passing the apex of the connexivum. Anterior femora strongly incrassated with some larger and smaller spines on the underside from the apex to not far from the base; anterior tibiae a little shorter than the femora, strongly curved towards the base, in the male with a strong tooth just behind the middle. First joint of posterior tarsi not quite twice as long as the two apical joints together.

Allied to the Indian genus *Fontejanus* Bredd. and very similar to it in *facies*. In both these genera the anterior lobe of the pronotum is so considerably elongated that the forelegs are inserted but little before the middle of the body. The new genus is, however, easily distinguished from *Fontejanus* by the exserted head, the less separated ocelli, the much shorter basal joint of the rostrum, the longer hemelytra (these particularly having the claval suture and commissure much longer) and the unarmed middle femora. The anterior male tibiae, too, are

toothed much nearer to the middle and the basal joint of the hind tarsi is shorter.

Togo victor n. sp.

Dull black, antennæ, first and second joint of rostrum, apical margin of prothorax (narrowly) and lateral margins of abdomen tawny, first antennal joint towards the base and extreme apex of second joint fuscous, apex of third joint and the whole fourth joint blackish, basal border of pronotum, corium, clavus, extreme apex of scutellum, acutular margins (obscurely) and posterior angles of metasternum whitish, some small spots to hemelytra fuscous, apical margin of corium fuscous, more broadly so towards the apical angle, legs pale yellow, anterior femora (except base and extreme apex) and apical halves of middle and posterior femora black, extreme apex of tibiæ and the whole last joint of tarsi fuscous. Head very thickly and finely punctured, second antennal joint more than twice as long as first, third joint somewhat shorter than second, fourth about as long as second. Pronotum not fully twice as long as the head, a little broader at the base than half the length, finely punctured but less thickly so than the head, anterior lobe moderately convex with its greatest width a little behind the middle, where it is distinctly broader than the head, posterior lobe slightly narrower than the anterior lobe. The breast finely moderately thickly punctured. Hemelytra one fourth longer than the pronotum, corium rather finely and thinly punctured with brown, lateral border impunctate, membrane blackish. Abdomen clothed with very fine and short yellowish sericeous pubescence. Length, ♂ 6.5 mm.

Japan (Tokyo); found by Mr. Kuwana.—Col. C. F. Baker.

Two new Termites.

BY NATHAN BANKS.

There has recently been a great awakening in the collection and study of termites. Our forms are not numerous, so that there is not the stimulating prize of new species to quicken the student, yet we have some very interesting genera. Among them is *Termopsis*, a new species of which I describe from Arizona, and a most curious form from Florida. So striking is the soldier of this species that I do not hesitate to consider it a new genus. These two new species, together with two recently described by Desneux, make about twelve species of termites from our country.

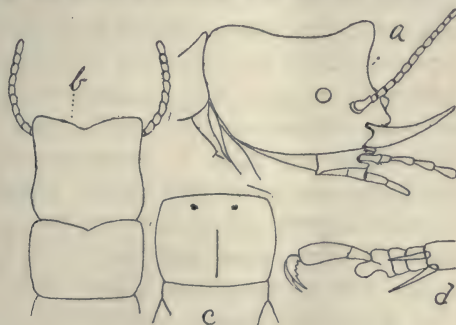
CRYPTOTERMES n. gen.

No ocelli in any stage; no plantula to tarsi; only costal venation to wings distinct, this consisting of a subcostal vein along the margin to tip and a closely parallel radius with three branches running into the subcosta. There are two spurs at apex of all tibiæ; four tarsal joints, the last much the longest, with a lobe at base, claws are very stout on base, faintly toothed at middle, and then very slender. The soldier has the head enlarged in front, with a great cavity on the face, evidently used to close passages of nest.

Cryptotermes cavifrons n. sp.

Soldier.—Yellowish brown, abdomen whitish, antennæ white, anterior part of head and the mandibles jet black. Head greatly enlarged in front so that seen from above it is nearly square, constricted sides, and an emarginate front-line, in front there is a great, broad cavity from antennæ and mandibles up to vertex, the mandibles are large and long, and much curved; the antennæ are about as long as head, with 13 joints. The pronotum is broader than long, with slightly convex sides. The eyes are distinct, a little behind antennæ.

Winged male.—Pale yellowish brown, legs and antennæ paler; wings hyaline, the costal veins yellowish; a black dot each side on front of



a, side of head.
b, top of head and prothorax.
c, prothorax of winged male.
d, tarsus.

pronotum. Eyes large, nearly reaching antennal sockets. Wings quite long, a subcostal vein to tip, a radius with branches ending at same place as subcosta; in fore-wings the radius has three oblique branches, running into subcosta, the first arising beyond middle of wing, the second before end of first, the third opposite end of second; in hind-wings there is also a cross-vein beyond the third branch. Antennæ with sixteen joints; pronotum broader than long, corners rounded.

Worker.—Pale whitish or yellowish. Antennæ eleven or twelve-jointed.

Several specimens from Kissimmee, Florida, in rotten wood.

Termopsis laticeps n. sp.

Soldier.—Head bright red-brown, darkest in front; mandibles shining black; pronotum reddish yellow; abdomen and legs pale yellowish; antennæ yellowish brown. Similar in most respects to *T. angusticollis*, but the head is much broader, especially behind, than in that species; the pronotum, however, is not broader, so that the head behind is twice as wide as the pronotum; antennæ about twenty-two-jointed.

Winged male.—Similar to *T. angusticollis*, but with a slightly broader head; the eyes much larger than in that species; their anterior edge reaching the antennal sockets. The costal margin of the wings is much paler than in *T. angusticollis*, but the venation is similar to that species.

Several from Florence and Douglas, Arizona, August (Snow and Biederman).

Notes on the Habits of *Cicindela*.

BY RICHARD MOORE, M. D., Rochester, N. Y.

The following notes were made during a term of enforced idleness, and although these observations on the habits of *Cicindela repanda* and *purpurea* may be common knowledge to most entomologists, I have never seen them in print and they may be new to some.

Their habits were studied both in the field with the use of an opera glass, and while they were confined in a box with glass sides. This cage was placed on a table and allowed the observation of their actions to be made with the greatest ease.

Besides the usual habitat of dirt roads, paths in grassy swards and bare places generally, *C. purpurea* was found in fields where the grass was short and sparse, with small open places the size of one's hand. In such places they do not flush easily, and instead of flying when disturbed made their escape by running in and out of the grass, hiding under a tuft of grass, more like a carabid than a cicindelid. In the early spring, on hot days, they were found in numbers in such places, very lively and active. In August and September they were found only in roadways and lanes where the grass has been worn away by travel, disporting themselves more soberly than their spring brethren. They are strong fliers, but usually content themselves with short excursions, unless persistently pursued. When pursued they fly a few feet farther down the path, then alight; this will be repeated once or twice, but if still disturbed, they turn from the path and alight in the grass alongside of it. They are strong and rapid runners, and after dropping in the grass, run with great rapidity towards an open space and either take flight immediately or lie crouched to the ground, ready to take wing if further disturbed. They are diurnal in habit, but in the early spring and summer, if the day was hot, they remained active until late in the evening and then retired for the night under a chip of wood or stone. In late summer and fall they were found on cloudy and cool days, in small burrows, dug at the foot of clayey banks or even in the sides of a wagon rut, lying in wait for any small insect that may come near, rushing out at these, and, if making a cap-

ture, retiring to the burrow to eat. These burrows were readily found, as the little pile of freshly dug pellets of earth betrayed the insects' hiding place. Their gait, when undisturbed, is rather deliberate for members of this genus, they walk slowly, exploring their feeding ground with great thoroughness, making dashes at any small insect that comes within range of their vision. One that was watched, traversed a lane twice in an hour without taking wing. The distance traveled was about one hundred and twenty feet, without counting the zig-zags from side to side, made in quartering the ground in search of food.

In captivity they were voracious eaters, feeding on flies and other soft-bodied insects that were killed and placed in their cage. Eight or ten flies were none too much for a single beetle. They were particularly fond of ants, a small black variety being their favorite. *C. purpurea* is the only *Cicindela* that was observed that would capture and eat ants, in fact they seemed to prefer them to any other food offered. They were able to see the ants at about four or five inches away; when seen the ant was rushed, bitten once and given a toss, as a terrier does when he catches a rat, rushed again and bitten, this being repeated until the ant showed little or no signs of life, when it was very deliberately chewed and swallowed. While hunting, they stand very high; when biting their prey they have a queer see-saw motion of their body, bobbing their head up and down and standing very high on their hind legs. When disturbed they squat instantly and remain motionless, if the danger becomes more threatening, they spring into the air and take wing. That they have this power of springing into the air, and to which perhaps is due their ability to take wing so readily, is seen in those who from anchyloses of the elytra are unable to fly. One of these deformed beetles that was under observation was able to jump clear from the ground a little over an inch. They may hibernate, as they were found late in October buried to the depth of eighteen inches very much alive. One that was kept in captivity, captured late in the fall, was alive in its burrow at Christmas time. It died shortly afterwards, due probably to neglect to keep the earth in its cage moist.

Cicindela repanda was found everywhere during the summer. They began to make their appearance here the last of April or the first of May, in sandcuts, roadways and railroad cuttings. They were gregarious, one portion of the sandcut swarming with them and none to be found a hundred feet away. Later in the summer they were found on the shores of the lake and river, where every sandspit was covered with them on a hot day. When flushed they flew but a short distance, then alighted; if persistent pursuit was made of an individual, it would fly some fifty or more feet before alighting, or what is more likely, would circle around the pursuer and alight at some distance behind him. The insect usually squats as closely to the ground as it can after alighting and remains motionless. If the pursuer remains absolutely stationary after the insect alights, in a short time, two or three minutes, it will raise up from its squatting position and begin to look for food, running rapidly, stopping every foot or so, zig-zagging so as to quarter the ground thoroughly. In only a small per cent. of those watched did they turn just as they alighted to face the pursuer. This manœuvre was more apt to occur if they were flying with the wind, and was probably to enable them to alight easily. *Cicindela repanda* stands very high on its feet in walking, resting upon the outer joints of the tarsi. If disturbed it squats close to the ground; if further frightened, jumps a little into the air, unfurls its wings and is away. They would usually flush when one is about four to six feet from them, especially if one is walking with the wind or his shadow is cast before him; if great care is taken in moving, walking very slowly and quietly, they did not take alarm until one approached within two feet or less. Their vision seems limited to four or six inches; a stick could be pointed towards them until it reached within seven inches, without frightening them, a further approach was apt to start them off. None were seen to take notice of insects that passed them at a further distance than four inches. In captivity they eat flies, preferably the ordinary house-fly. After seizing the fly they run a short distance with it before beginning to eat. During the time of eating they were very timid, running if another beetle comes near them. It took one four or

five minutes to devour a house-fly, and for several minutes after the fly had disappeared the beetle stood, chewing and chewing like a cow with a cud. Small beetles like a *Bembidium* for instance, when put in the cage, would be chased and bitten, but no harm done them. They seemed in mortal fear of ants, running away from them and never offering to bite or chase them. They are very thirsty beings, those kept in captivity drank after every feeding; the first thing they did in the morning after emerging from their burrows was to drink, and also at various other times during the day. Their method of drinking is to seize a morsel of moist sand with their mandibles, and with the head thrown back hold it free from the ground and suck the water from it. If the sand was quite wet they would bury their jaws into it almost as deep as their eyes, with the mandibles spread far apart, and drink in that way. A saucer was sunk in the sand in the cage to imitate a pond; at no time was one seen to drink from it. As an experiment one of the beetles was placed in a separate cage where the sand in it had been baked dry, a small glass receptacle easy to drink from and full of water was put on the bottom of the cage, great care being taken that no water was spilled on the sand. The beetle did not drink from it, and died, probably from thirst.

The males are very amorous, copulating while in captivity almost constantly. The manner of accomplishing the copulatory act is as follows: The male seizes the female with his mandibles around the lower segment of the thorax, and thrusting out his penis, which is exceedingly long for the size of the insect, of a brown color and curved upwards, tries to coax open the female's receptacle. If she is willing, this is a short process and the penis was thrust in with the utmost vigor its whole length. A few thrusts are followed by a period of rest, during which the penis is partially withdrawn. This period of rest is followed by another one of activity, to be again followed by a rest; this continues for about ten minutes, when the female makes her escape. When the female is not so complacent, she thrusts the end of her abdomen down against the ground to prevent the entrance of the male organ. Then begins a series of

manœuvres on the part of the male; he hugs her more closely, and standing high on his hind legs, with his middle legs lifts her abdomen from the ground, which she is pressing all the time, coaxing with the end of his penis, endeavoring to effect an entrance. Usually he succeeds, though sometimes the female is adroit as well as obdurate, and after some minutes spent in this amorous struggle his passion is gone, and the female releases herself from his embrace. One of the beetles was more passionate than his fellows, going without food, riding one female several hours, though unable to effect an entrance, and finally copulating with a dead female that lay in a corner of the cage.

Each afternoon, about five o'clock on ordinary days, about seven when the weather was extremely warm, they would retire to a shallow burrow dug in the sand. This burrow was dug near the edge of some object, like a stone or small block of wood. In this burrow the beetle stayed until eight or nine in the morning, and on days that were extremely warm they would emerge somewhat earlier, but, as a rule, they were late risers. These burrows were made by loosening the sand with the mandibles, then pushing it back, first with the fore legs, then with the middle legs, and then with the hind legs. The legs are used alternately, all on one side, then all on the other side. These burrows were one-half to one inch deep and opened out at the bottom into a chamber about one-half inch in diameter, enabling the beetle to turn around at the bottom of the burrow and face the entrance. Sometimes the burrow was made larger and two or more inhabited it. On rainy or cold days the beetles remained in their burrows. During one rainy spell they kept hidden for three days, then emerged as lively as ever.

There was frequently observed certain actions of the insects confined in the cage, which simulated play. These same actions were observed twice in the late summer among some beetles that crowded a little sandspit on the banks of the river. This play, if it can be called such, consisted in a cicindelid rushing at a fellow, either snapping at him with his mandibles or merely bumping against him and then running off, when the jostled one would give chase and they would run around the cage after one another. Sometimes a beetle would jostle another

several times before the jostled one would give chase. While watching them do this one was reminded of boys at play.

In captivity they lived about two months; towards the end they became cripples, legs and antennæ were lost, the struggle for existence became more arduous and they finally succumbed.

Twice I had the good fortune to see *C. repanda* ovipositing. The female, after several attempts, succeeded in forcing the end of the abdomen, or an extruded portion which acted as an ovipositor, through the hard crust of sand. The hind legs were wide apart, the middle and front legs were extended to their full extent, just touching the ground. Her position was that of sitting on the end of the abdomen. The act lasted about ten minutes, and during that time she showed no alarm at a stick pointed at and almost touching her. How many eggs were laid was not ascertained. Two eggs were obtained, one was a straw-yellow, the other a pearl-gray. The yellow one was 0.50 mm. wide, 0.78 mm. long, the gray one 0.45 mm. wide, 0.75 mm. long. Their shape was a short oval, with corrugated surface of a triangular pattern. At one pole there was a well-defined ridge, above which the egg was flattened and slightly lower than the surrounding portion of the egg. They were held together and also adhered to the sand by a few adhesive filaments.

A new *Corethrella* from Jamaica.

By M. GRABHAM.

Corethrella appendiculata n. sp.

Female.—Head black, covered sparingly with very small yellow hairs; a few long yellow hairs along the borders above the eyes. Eyes black, kidney-shaped. Proboscis and palpi yellow. Antenna: basal joint nearly globular, a few fine golden hairs on its upper surface and around the point of articulation of the second joint there is a sculptured radiating pattern; second joint densely covered with hairs; each of the following joints except the apical one has a band of long hairs above the middle, as well as the longer basal verticel; apical joint narrow, longer than the penultimate. Mesothorax black, with many fine yellow hairs on its surface as well as a few long black ones. Scutellum narrow, with a few long yellow hairs on its border. Metathorax black, nude. Abdomen densely covered with long golden-yellow hairs. Venter black.

Wings pale yellow, densely scaled with hair-like scales on the veins; outer and inner margins with a heavy fringe of coarse, long scales. A

broad curved dark band across each wing beyond the middle, including a portion of the fringe but broken by the absence of dark scales on the third long vein. The band is darkest on the costal and first long veins. There is also a triangular dark area with its base on the lower quarter of the costal vein and its apex on the fourth long vein. The space between these two dark areas is of a richer golden-yellow than the rest of the wing. A small black spot at the extreme base of the wing near the origin of the long veins. Halteres pale yellow. Legs black, very hairy, with apical bands of bright yellow hairs on all the joints. Many yellow hairs interspread with the black ones, especially on the feet. Femora slightly swollen. Ungues much curved, simple and equal.

Male.—Antennæ pale yellow; basal and second joints as in the female; all the following joints, including the swollen terminal one, with well-developed basal verticels of long hairs; there are also many long fine hairs arising along each joint; on the last three joints these are much shorter. Ungues equal and simple. Length: One and one-half mm.

Adult larva.—Head pale yellow, compressed antero-posteriorly. Antennæ inserted close together at the front of the head, folded back and hidden along the anterior border, only the three apical spines projecting forward; apical spines slender, curved, the longest nearly half as long as the shaft, the other two slightly shorter; inserted with them a short comb-like appendage. Spines of the lateral sclerite about fifteen, stout, not inserted upon a ridge, the larger obsoletely serrate along their con-



CORETHRELLA APPENDICULATA (larva).

1.—Labium.

2.—Process from appendage of 9th segment.

cave borders. Labium with thirteen teeth; the outermost pair very small, the next four pairs progressively larger; central tooth as long as the longest of this series; tooth on each side of the central one only half its length. Mandibles with seven stout teeth, the two innermost largest. Thorax and abdomen glabrous; colored a pale purple, rather darker laterally. Eighth and ninth segments not pigmented. Thorax elliptical, broader than the head. First abdominal segment very short, second widest, seventh and eighth segments much attenuated. Three large simple setæ on each side of the two first abdominal segments; a pair on each of the following to the seventh, which has no long lateral setæ. A stout subventral hair on each segment from the third to the sixth, arising near the posterior border. Subdorsal hairs apparently absent. A group of several stout branched hairs at the posterior lateral border of the eighth segment. Tube stout, compressed, about half as long again as wide; a pair of branched hairs at the back below the middle, not reaching to the top of the tube; at the posterior aspect of the summit there is a small simple straight hair on each side; in front of this nearer the side is a stout spine, arising from a prominent tubercle, and curved inwards at its apex; a little in front of this again a large pyramidal tubercle with a thorn-like apex and a conspicuous black pigment spot near the top, it has also a long and stout subapical

spine which curves outwards at its point. Ninth segment strongly curved downwards; the dorsal tuft of two pairs of very long double setæ rather widely separated; a little lateral to these a single long stout spine arises from a prominent tubercle on each side. Ventral tuft of four pairs of long simple setæ arising close together. Anal gills four, fleshy, equal, shortly subconical with rounded apices. Between the ventral tuft and the lower pair of anal gills there is a small lateral prominence on each side bearing four blade-like plates serrated along their anterior borders with a number of progressively larger recurved serrations, and with two much longer pointed processes near their bases.

Note on the pupa.—Pale purple in color; thorax and abdomen in the same straight line; floating vertically when at rest at the surface of the water. Each pointed process on the terminal segment has two short spines at the apex, one-half the length of the other; there is another short spine on the outer border at the apical third. Penultimate segment with one small lateral hair; antepenultimate segment with four short lateral hairs on each side. Lateral margin serrate, devoid of a fringe.

Type No. 9960, U. S. N. M.

Notes on the habits.—A few larvæ were found in a hollow tree in Kingston, Jamaica, about the middle of May, 1906. No young larvæ were found. The water was brown and thick, and contained numerous minute crustaceans, upon which they feed. Observed in a breeding jar they only occasionally came to the surface and then lay horizontally like anopheline larvæ. Usually they remained at the bottom and displayed marked activity, the head and anterior part of the body being now and then rapidly jerked from side to side in their efforts to capture crustaceans. No visible movements, creating currents such as are seen in many culicid larvæ in the organs surrounding the mouth, were noticed. The hinder part of the body was apparently kept anchored by the appendages on the terminal segment. The larvæ were often seen to suspend themselves by these appendages to the side of the jar. When disturbed they wriggled with quick lateral movements in a backward direction; this appeared to be their normal method of progression. They differ from the larvæ of *C. brakeleyi* in the different shape of the head and arrangement of setæ and in the absence of the chitinous plates on the seventh and eighth segments. The pupa stage lasted about three weeks.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1906.

The great value of the study of entomology from an economic standpoint, not only in relation to agriculture and horticulture but in regard to many products useful to man, makes it a pursuit of the utmost importance. The silk and honey industries may be particularly mentioned as being of much interest and value, and bring in a large revenue, and produce both apparel and food. While much has been accomplished in advancing knowledge of insects as carriers of disease-producing organisms, this study is probably only in its infancy, and while this knowledge is of incalculable benefit there is much more to be learned. The value of products annually destroyed by insects in the United States has been placed as high as \$1,000,000,000. In view of all this it is probable we do not as individuals do as much as we should to create an interest in this subject among the masses of the people, and try and enlighten them in regard to simple truths. It sounds very curious for an otherwise intelligent person to say that the house-flies come down from the sky with the spring rains. Still another individual said that mosquito eggs were laid by house-flies. An officer of the State Board of Health of Pennsylvania thought that *Balaninus proboscoides*, the beetle produced from the chestnut worm was poisonous and capable of harming human beings by means of its long proboscis. Is there not some means by which we can do more to enlighten the public and advance the interests of entomology?

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

The Association of Official Entomologists of the Cotton Belt will meet at Baton Rouge, Louisiana, November 13th and 14th. Members of the Association of Economic Entomologists, as well as others who may be interested in entomological work in the South are cordially invited to attend and participate in the meetings. Interesting and valuable papers will be read.

AN APPEAL FOR INSTANT AID.—The last installment of manuscript of the Odonate part of the *Biologia Centrali-Americana* will be forwarded to the printer within a few weeks. The immediate loan of any Odonata from any point in Mexico or Central America will be greatly appreciated. Please send such material to me at the Academy of Natural Sciences, Logan Square, Philadelphia, Pa. I will pay the cost of transportation.—PHILIP P. CALVERT.

MYDAS FULVIFRONS ILLIGER.—*Mydas fulvifrons* at last has a female. The male has been known since 1802, when Illiger described it from Georgia. In later years it was also recorded from Florida. It happened that Osten Sacken described a female *Mydas* from Texas in 1874, under the name of *chrysostoma*. Mr. Chas. W. Johnson has taken both "species" at Sea Isle City, N. J., and Anglesea, N. J. The male of *chrysostoma*, as well as the female of *fulvifrons*, travelled incognito until now, and alas, the secret is out. *Mydas fulvifrons* ♂ and *M. chrysostoma* ♀ are one. I have taken them in coitu at Stone Harbor, N. J., July 29th, 1906, and Miss *M. chrysostoma* should henceforth be Mrs. *Mydas fulvifrons*.—ERICH DAECKE.

RHOPALOCERA IN THE VICINITY OF PT. ARENA, MENDOCINO COUNTY, CAL.—While camping in a canyon in Mendocino County, near Pt. Arena, during the months of July and August, I had a good chance to collect most of the species of Rhopalocera found there. This canyon is about a hundred miles northwest of San Francisco. The stream which runs through it empties directly into the Pacific. Along the coast the country is rather level, becoming hilly and mountainous farther up stream. Most of this coast land is cultivated, and there are almost no trees except a few pines on the hilltops. It was among these pines, where wild violets were plentiful, that *Brenthis epithore* was found.

The canyon proper begins about four miles back from the ocean. Its sides were covered with underbrush, including several species of *Rubus* and many ferns. Redwoods, tan-bark oaks (*Quercus densiflora*), alders, bay trees, elders, wild lilacs (*Ceanothus thyrsiflorus*), etc., were found here. At one spot in the canyon there is an abandoned tie-camp,

around which thistles and nettles grew abundantly. *Grapta*s were found around the nettles, and most of the other butterflies were found on the thistles, especially on a species which blossomed late in August. W. J. Holland ("The Butterfly Book," 1898) says that *Pyrameis huntera* "ranges from Nova Scotia to Mexico east of the Sierras." W. G. Wright ("Butterflies of the West Coast," 1905) states that "*huntera* flies over the whole of the United States," but he also says that "it is very wary, and not easily caught." I found *huntera* on the last mentioned species of thistle and it was very easily caught.

The following is a list of the *Rhopalocera* collected either in the canyon or in the nearby fields:

Anosia plexippus Linn; *Argynnis coronis* Behr; *Brenthis epithore* Boisid; *Melitaea chalcon* Dbl. & Hew; *Phyciodes mylitta* Edw; *P. pratensis* Behr; *Grapta satyrus* Edw; *G. satyrus* var. *marsyas* Edw; *Vanessa californica* Boisid; *Pyrameis atalanta* Linn; *P. huntera* Fabr; *P. cardui* Linn; *P. caryae* Hübn; *Junonia coenia* Hübn; *Basilarchia lorquini* Boisid; *Adelpha californica* Butl; *Coenonympha californica* Dbl. & Hew; *Thecla grunus* Boisid; *Chrysophanus helloides* Boisid; *Lycacna acmon* Dbl. & Hew; *Pieris napi*, var. *pallida* Scudd; *P. rapae* Linn; *Anthocharis sara*, var. *flora* Wright; *Colias eurydice* Boisid; *C. keewadin* Edw; *Papilio rutulus* Boisid; *P. eurymedon* Boisid; *Pyrgus tessellata*; *P. montivagus* Reakirt.—ERVAL J. NEWCOMER, Palo Alto, Cal.

THE KANSAS UNIVERSITY COLLECTION.—Stored in the topmost story of the new Natural History Museum building, where it is almost invariably overlooked by the casual visitor, is the entomological collection of the University of Kansas. Here 200,000 specimens, representing more than 21,000 species, are carefully preserved and neatly classified in the fifteen cabinets especially arranged for them, all collected somewhere in the United States.

Dr. F. H. Snow, the curator, has estimated the value of the collection at \$50,000, but it probably could not be anywhere near replaced for that sum. The beetle collection is especially fine.

Valuable as the collection is, it has cost the State of Kansas hardly a fraction of its real value, as it represents the work of Dr. Snow, who started and has fostered the collection in all the forty years he has been with the university. In early days, when the university was small and had no money to spend on scientific expeditions of any kind, the collection was started by Dr. Snow, who made the collecting trips entirely at his own expense, roughing it just the same as a prospector would do, but always bringing back several thousand specimens to add to the university collection. In all he has made twenty-four such collecting trips, but of late years the expenses have been paid by the university.

Dr. Snow is generally accompanied on these expeditions by students in the entomological department, who wish to get the practical experi-

ence in collecting and classifying specimens. Only the barest necessities of life are taken along.

All the many thousand specimens in the University of Kansas collection have not been the direct result of Dr. Snow's expeditions. Some have been obtained by trading duplicate specimens. Especially is this true in the beetle collection. In one of his earliest expeditions in Logan County in the summer of 1877, Dr. Snow made a genuine find, a giant tiger beetle, *Amblycheila cylindriformis*, then an extremely rare species and valued at \$25. Early in the morning was the best time to capture these valuable specimens, so every day the entire party would be up before sunrise and off to the haunts of the tiger beetle at the foot of some cliffs nearby. Down on their hands and knees they would go and the active search for the \$25 specimens would begin.

In all a thousand specimens were obtained of this valuable beetle, and it was by trading these that the foundation of the beetle collection was made. Twenty-five dollars' worth of the insects for each giant tiger beetle soon caused the collection to swell wonderfully in proportions, but in time the market became flooded with the beetles and their value depreciated accordingly.

NAMES OF COLEOPTERA.—I am greatly indebted to Mr. E. Bergroth for some corrections to my paper in the September News. *Helopeltis* Horn. is *Helobata* Bergroth, Deutsche Ent. Zeitschr., 1888, p. 222, and our species will be *Helobata larvalis*. *Ino*. Lap. is *Inoplectus* Smith, 1851. Our species will be *Inoplectus reclusus* (Lec.) and *I. immundus* (Reit). *Drapetes* Redt. stands as *Drapetes* Meg. "is not a published name." *Wollastoniella* was used by Reuter in Hemiptera in 1884 (it is not in the Index Zoologicus); *Wollastonia* Horn may become *Parahornia* n. n.; type *Parahornia quercicola* (Boh.).

A few misprints are confusing enough to be worth correcting: p. 240, for *Diplochelia* read *Diplocheila*; p. 244, for *Amblychelia* read *Amblycheila*; for month, read Montf.; for 2 and 9 read Q. and G. (Quoy and Gaimard).—T. D. A. COCKERELL.

A FEW CORRECTIONS.—"On some new species of Geometrid Moths from Arizona and California," described by Rev. George W. Taylor in the June issue of the ENTOMOLOGICAL NEWS, Vol. xvii, No. 6, the following errors in spelling should be corrected: Page 188, description 1, should read *Melemaca* instead of *Melemaca virgata*, according to the original description by Mr. Hulst in the "Trans. Am. Ent. Soc.," xxiii, September, 1896, page 340.

Description No. 5, page 190, should read *Euemera* instead of *Enemera simularia*, as both Mr. Dyar and Mr. Smith are incorrect according to the original descriptions by Mr. Hulst in the "Trans. Am. Ent. Soc.," Vol. xxiii, page 368.—LOUIS W. SWETT.

SOME ARACHNIDA FROM WASHINGTON STATE.—Among a small number of Arachnida collected by me in the vicinity of Seattle I think it worth recording the following species, as I believe most of them are hitherto known only from more southern or eastern localities: *Philaeus militaris* Hentz; *Cybaeus reticulatus* Sim; *Amaurobis pictus* Sim; *Theridium sexpunctatum* Em; *Lepthyphautes arcuatus* Keys; *Ideobisium theveneti* Sim. They have kindly been determined by Mr. N. Banks.—E. BERGROTH.

CORRECTIONS VOL. XVII.

Page 302, line 18—*waldonii* to *waldenii*.

“ “ “ 38—insert “area” between “punctate” and “at.”

“ 303, “ 3—*culbitus* to *cubitus*.

“ “ “ 7, 19, 26, 30, 35—*waldonii* to *waldenii* and Waldon to Walden.

“ “ “ 12—say to Say.

“ “ “ 26—etoid to third.

“ “ “ 33—*eyregia* to *egregia*.

“ 304, “ 13, 37, 43—*waldonii* to *waldenii* and Waldon to Walden.

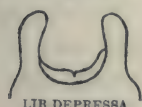
“ “ “ 18—transient to trenchant.

TENACITY OF ACANTHIA LECTULARIA LINN.—In 1902 I bought a new willow rocking chair from a Cincinnati furniture dealer. It had arms made of plaited willow; whenever I sat in this chair, with shirt sleeves rolled up, my right arm, which rested on the chair arm, would be bitten and swollen. I soon came to the conclusion there was “something doing” in the arm of the chair, so I laid it over a large sheet of paper and poured gasoline over it. Out of the arm of the chair I jarred 150 (actual count) fiendish “bed bugs.” This was the same year I bought the chair. Since then, every summer, there have been bugs in that chair. I have poured boiling water over it, and drenched it with gasoline, but enough eggs have always escaped destruction to keep things going. I am ready to present this *Hemiptera incubator* to any Hemipterist who will take it.

—CHARLES DURY, Cincinnati, Ohio.

On the night of September 20th my wife was greatly annoyed by the persistency and ferocity of a mosquito, and was obliged to get up and apply oil of citronella to be able to sleep. In the morning the mosquito was located in the room, but efforts to catch it failed, as it flew whenever approach, and a net was not at hand. When I returned in the evening my wife said she had succeeded in getting it into a cyanide tube. I did not know the species at sight and a table for determination I consulted did not list it. Finally, I found it to be *Janthinosoma musica* Say. I imagine the second story of a house in the heart of a large city (Philadelphia) where there is nothing but bricks and mortar and paved streets for miles is a rather unusual place for this species.—HENRY SKINNER.

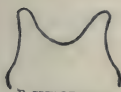
PLATHEMIS SUBORNATA (Odonata).—Among some dragonflies recently received from Ernest Oslar are specimens of the above species. References to this species are rare; in fact in addition to Hagen's notes, I know of only one other, a passing reference by Ris,* excepting, of course, its occurrence in catalogues (Kirby and Banks). For this reason



LIB DEPRESSA



PLA LYDIA



P SUBORNATA



P SUBORNATA

a brief note on characters and distribution as shown by Oslar's material may not be out of place. In fully adult males the wing coloration, by the increase in density of color between the two wing bands, becomes almost indistinguishable from *Plathemis lydia*. The most reliable character I have found for separating the two species in such a case is the form of the bifid ventral tubercle on the first abdominal segment, as shown in the accompanying figures. As shown, *subornata* is somewhat variable, but can never be mistaken for *lydia*. I cannot detect any structural character for separating the females of the two species. Other characters separating them are: *subornata*, ♀, abdominal segments 9 and 10 largely black; 5-8 with lateral spots continuing the direction of spots anterior to them, not lowered to the lateral carina; antehumeral stripe or vestiges present; wing apices not dark; *lydia*, ♀, abdominal segments 9 and 10 largely pale brown; 5-8 with lateral spots touching lateral carina, not in line with spots anterior to them; antehumeral stripe wanting; wing apices dark.

One ♀, Albuquerque, New Mexico, July, 21, 1902, is like *lydia* in all characters, excepting that the wings lack the apical dark area. This specimen lacks any hint of the second or distal wing band present in *subornata*. In fact its wing markings rather suggest *Libellula forensis*. I regard it, however, as certainly *lydia*. Another ♀ of *lydia* (Albuquerque, New Mexico) has a trace of a subapical brown spot behind the stigma, as in *subornata*. This gives each wing 4 spots. Oslar's collecting contains specimens from the following localities:—*subornata*: Albuquerque, New Mexico, July 17, 1902, and without date labels; Gallinas Canon, New Mexico, July 23, 1902; Rio Grande, New Mexico, July 12, 1902, and without date labels; Pagosa Springs, Colorado, June 30, 1899; Berkeley Lake, Colorado, June 15, 1898, and without date labels; *lydia*: Albuquerque, New Mexico, July 17, 21 and 27, 1902; Rio Grande, New Mexico, July 12 and 27, 1902, and without date labels; Arroyo, Pecos River, New Mexico, July 12 and 17, 1902, and without date labels; Berkeley Lake, Colorado, June 15 and 30, 1898, and July 23, 1901; Sloans Lake, Denver, Colorado, June 1, 1898.—E. B. WILLIAMSON.

* And Needham and Cockerell, *Psyche*, 1903, p. 135. After writing the above I notice that Dr. Calvert has made use of the same characters of the bifid tubercle in treating of *subornata* in *Biol. Centr.-Amer. Neur.* p. 205, Oct., 1905.

On the Formation of an Entomological Society of America.

TO ALL INTERESTED IN ENTOMOLOGY.

The initial meeting of The Entomological Society of America will be held in New York City in connection with the mid-winter meetings of the American Association for the Advancement of Science.

This society has been organized to meet the need of a national entomological society, which shall represent all departments of entomology, and which shall hold a place in American entomology similar to that held in their respective countries by the great foreign entomological societies.

It is hoped that this movement will have the co-operation of all of the existing entomological societies in this country, and that it will in no way interfere with the success of any of them. It is believed that a strong national society, which shall bring together workers in all fields of entomology, will tend to broaden the interests of each, and to strengthen the more special or local societies.

The amount of entomological work that is being done in the United States and Canada is great compared with what is being done in any other country; it is fitting, therefore, that the workers in this field should be united in a national society.

On another page there is given the report of the Committee on Organization, and an invitation is hereby extended to every one interested in entomology to join the society. Applications for membership may be addressed to J. H. Comstock, Ithaca, New York.

THE ENTOMOLOGICAL SOCIETY OF AMERICA.

A meeting of the committee to organize a national entomological society, for which provision was made at the Philadelphia meeting of the Entomological Club of the A. A. A. S., was held June 28, 1906, in the entomological laboratory of Cornell University. The New York Entomological Society was represented by Mr. Carl Schaeffer; the Chicago Entomo-

logical Society, by Dr. James G. Needham; the Jugataë (the Ithaca Society), by Professor J. H. Comstock; the Newark Entomological Society, by Mr. J. A. Grossbeck; the Entomological Society of Ontario, by Rev. Professor C. J. S. Bethune, and the American Entomological Society, by Mr. J. Chester Bradley. At an adjourned meeting the Washington Entomological Society was represented by Mr. E. S. G. Titus.

The committee was organized by the appointment of Professor Comstock as chairman, and Mr. Bradley as secretary.

The Secretary then stated in brief the history of the present movement for the organization of a national entomological society. The parts of Mr. Lyman's two presidential addresses dealing with the organization of an entomological union were read and discussed. Discussion then followed as to the purposes for which such a society should exist and as to whether there was need for one. The opinion that there was such a need seemed to prevail, but it was urged that if the society be formed it should be based on broad and comprehensive grounds. It was then moved that it is the sense of this committee that the organization of a national entomological society is desirable. Every member in turn was called upon for an expression of opinion, and every one spoke in favor of the organization; but it was the feeling of the committee that the success of such a society would depend on the securing of co-operation of other societies like the Association of Economic Entomologists and the Entomological Club of the A. A. A. S.

It was suggested that provision might advantageously be made for committees on policy, as on education, on legislation, on museum methods, and on nomenclature.

Strong opposition was made to the formation of any independent code for entomologists; but it was believed that a committee on nomenclature might have legitimate ground for existence in voicing the peculiar needs of entomology in matters of nomenclature and in securing their adequate representation in the International Zoological Congress.

A sub-committee was appointed to draft a Constitution and By-Laws, which should embody the decisions reached by the committee, and to report them at an adjourned meeting.

The committee then discussed membership, dues, officers, elections and other matters. The decisions concerning these were subsequently embodied in the Constitution and By-Laws. The committee then adjourned until the following day.

At an adjourned meeting, held June 29, 1906, the report of the Sub-Committee on Constitution and By-Laws was read and discussed. After the making of some changes the report was adopted, and the sub-committee was authorized to prepare and have printed a report of the committee, together with the Constitution and By-Laws, and to send them, with an invitation to be present at the initial meeting of the society, to every entomologist in the country whose address could be learned, and to have them published in the entomological journals. The sub-committee was also authorized to call an initial meeting in New York City in connection with the midwinter meetings of the A. A. A. S., to make arrangements for that meeting, and to transact such other business as may be necessary.

At a second adjourned meeting, held June 30, 1906, it was decided to apply at once for affiliation with the American Association for the Advancement of Science, and such application was subsequently made.

J. CHESTER BRADLEY, *Secretary*.

The Entomological Society of America.

CONSTITUTION.

ARTICLE I.

NAME.

SECTION I.—This organization shall be known as THE ENTOMOLOGICAL SOCIETY OF AMERICA.

ARTICLE II.

OBJECTS.

SECTION I.—It shall be the purpose of this society to promote the science of entomology in all its branches, to secure co-operation in all measures tending to that end, and to facilitate personal intercourse between entomologists.

ARTICLE III.

MEMBERSHIP.

SECTION 1.—The active membership of this society shall consist of two classes: *members* and *fellows*.

SEC. 2.—All persons interested in entomology shall be eligible to membership.

SEC. 3.—Members who have contributed to the science of entomology in some important way may be elected fellows of the society. The number of fellows shall not exceed fifty at any time.

ARTICLE IV.

OFFICERS.

SECTION 1.—The officers of the society shall be a President, two Vice-Presidents and a Secretary-Treasurer. The duty of these officers shall be those usually pertaining to their respective offices.

SEC. 2.—The business of the society not otherwise provided for shall be in the hands of an Executive Committee, consisting of the officers named in Section 1, and six additional members, who shall be elected by the society. Four members of the committee shall constitute a quorum.

SEC. 3.—The President shall represent the society upon the Council of the American Association for the Advancement of Science.*

SEC. 3.—All officers shall be elected by ballot at the annual meeting, for a term of one year, and shall be eligible for re-election.

ARTICLE V.

ELECTIONS.

SECTION 1.—Election of Members. Nominations for membership may be made by any two members, and election shall be by Executive Committee.

SEC. 2.—Election of Fellows. All nominations for fellows shall be signed by three or more members or fellows, and each nomination shall be accompanied by the following information

*This section was adopted provisionally; it is to be included if affiliation with A. A. A. S. be granted.

concerning the nominee: name, address, occupation, branches of entomology engaged in, positions held involving entomological experience, entomological work done, and list of publications.

Election shall be by ballot at the annual meeting, upon nominations approved by the Executive Committee. Ballot may also be taken upon such other nominations, previously sent to the Executive Committee, as may be demanded by any five members or fellows. All elections of fellows shall require a two-thirds vote of the members present.

ARTICLE VI.

MEETINGS.

SECTION I.—An annual meeting shall be held at such time and place as the Executive Committee each year may select.

ARTICLE VII.

AMENDMENTS.

SECTION I.—This Constitution may be altered or amended at any annual meeting by a two-thirds vote of the members present, a copy of each amendment proposed having been sent to members and fellows at least one month in advance of the meeting.

BY-LAWS.

1. The annual dues for members and fellows shall be one dollar.

2. A majority of the members present at an annual meeting shall constitute a quorum for the transaction of business.

3. Notice of all meetings of the society shall be sent to members at least one month in advance.

4. The Executive Committee shall provide a program for all meetings, including, at the annual meeting, a popular lecture, and a technical entomological exhibit of material and methods.

5. The time of the business meeting shall be published prior to the opening session of the annual meeting.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVII.

DECEMBER, 1906.

No. 10.

CONTENTS:

Miller—Some notes on the Dragonflies of Waterloo, Iowa.....	357	Girault—The method of feeding in <i>Lep- toglossus</i>	382
Sanderson—Texas Notes—III.....	361	Van Duzee—New North American Heteroptera.....	384
Rehn— <i>Conocephalus lyristes</i>	366	Jones—A new <i>Cuterebra</i> from Nebraska Fall—A new <i>Platycerus</i> and a new <i>Ple- ocoma</i>	391 393
Davis—Number of eggs of <i>Samia ce- cropia</i> , <i>Pulvinaria innumerabilis</i> , and <i>Culex pipiens</i>	368	Soule—Notes on Moths.....	395
Melander—Some new or little-known genera of Empididae.....	370	Editorial.....	398
Skinner—A new variety of <i>Papilio ru- tulus</i> Boisd.....	379	Notes and News.....	399
Skinner—A new <i>Syntomeida</i>	379	Entomological Literature.....	400
Weber—The song of the Mosquito....	380	Doings of Societies.....	403

Some notes on the Dragonflies of Waterloo, Iowa.

BY NEWTON MILLER, Thorntown, Iowa.

Waterloo is situated in the northeastern part of Iowa on the Red Cedar River. This region in general is level and dotted with ponds and sloughs. One of these sloughs extends along the northern edge of Waterloo around in a northwesterly direction for about a half mile, with a maximum width of about 175 or 200 yards. Its southern end communicates with the river, and its northern end terminates in more or less isolated ponds which extend almost to the river. During high water a large quantity of water from the river finds its way through this slough. Entering the slough, near town from the east, is a small stream six or eight feet wide. In and about this slough is a rank growth of wild rice, flags, cattails and smaller species. Around the northern end is a grove of small trees.

Such conditions are typical of a great number of places within a radius of a few miles of Waterloo. Those farther away from the river have in most cases no trees about them.

Red Cedar River, where it flows through Waterloo, is about 75 yards wide and is shallow for a river of its width. In the

vicinity of Waterloo its banks usually have an abundance of willows, while its course is narrowly margined by small timber. Dragonflies were very scarce along the river, but I was told they became abundant later in the summer.

South of Waterloo is Elk Run, a small stream some 20 to 30 feet wide, which empties into Red Cedar River about six miles below the town. Some trees grow along its course, and my collection along it was made in an open woods. Its bed is composed mostly of sand.

A short distance to the northeast of the mouth of Elk Run is a slough that has no trees or shrubs about it. This slough is in a pasture tract of land and the cattle keep the vegetation well eaten off, especially during the dry summer months, when a large portion of the slough goes dry leaving only a string of isolated ponds.

The dragonfly season did not open in the locality of Waterloo until after June 1st. However, a very few specimens of *Anax junius* and *Ischnura verticalis* were seen as early as May 20th. By the time dragonflies began to fly I had only one day and parts of two more to devote to the collection of Odonata. There had been four consecutive warm days previous to June 7th, on the afternoon of which I made my first collection. This hot, clear afternoon I collected about the slough north of Waterloo, especially that portion near the edge of town. Seventy-eight specimens were taken. The next morning, June 8th, which was hot and clear, I collected about the northern portion of the same slough, taking between 170 and 180 specimens.

The following day collections were made along Elk Run in the morning and about the slough near the mouth of Elk Run in the afternoon. The morning for the most part was clear, but shortly before noon it clouded up and by 2.30 o'clock it was so cloudy and windy that I had to give up my collecting. The high winds of this region are no little handicap to the insect collector. The result of my morning's work along Elk Run was more than 120 specimens. *Calopteryx æquabilis* was abundant along the banks in shady places. Those taken in the afternoon around the slough were for the most part small

species which had taken shelter in the grass from the wind and which I bagged by walking against the wind, dragging my net through the grass. *Ischnura verticalis*, *Nehalennia irene* and *Enallagma hageni* were abundant here.

Many of my specimens are teneral, which were very abundant around the sloughs. The rapidity with which three or four warm days were bringing out the dragonflies would indicate that these sloughs would be teeming with dragonfly life in a week or so of warm weather.

The following is a list of the species of my collection as determined by Mr. E. B. Williamson :

Calopteryx maculata Beauvois. Nine males, seven females, open woods along Elk Run ; quite abundant.

Calopteryx æquabilis Say. Twenty-five males, 23 females ; open woods along Elk Run in shady places. These 48 specimens were taken in less than two hours.

Heterina americana Fabricius. One male from the slough near the mouth of Elk Run.

Lestes unguiculatus Hagen. Ten males, nineteen females ; abundant about slough near mouth of Elk Run.

Lestes forcipatus Rambur. Two males.

Lestes rectangularis Say. Five males, 1 female ; scarce, just emerging ; slough north of Waterloo.

Lestes uncatus Kirby. Thirteen males ; 14 females ; abundant about slough near mouth of Elk Run.

Nehalennia irene Hagen. Twenty-one males ; 15 females ; very abundant about slough near Elk Run. This species was found near the ground or water in the grass where it had probably taken shelter from the wind.

Amphiagrion saucium Burmeister. Two males from the slough at north edge of Waterloo.

Enallagma hageni Walsh. Ninety-five males ; 15 females ; individuals of this species more numerous than any of the other 27 species ; most abundant about slough near mouth of Elk Run.

Enallagma ebrium Hagen. Six males from the slough north of Waterloo.

Enallagma antennatum Say. Thirteen males ; seven fe-

males; common about slough north of Waterloo and the one near mouth of Elk Run.

Ischnura verticalis Say. Twenty-eight males; 21 females; abundant about the sloughs at Elk Run and north of Waterloo. This was one of the earliest species out. A few individuals were seen at least two weeks before other species, except *Anax junius*, appeared in any numbers.

Anomalagrion hastatum Say. One male.

Gomphus fraternus Say. Two females.

Gomphus cornutus Tough. One female in poor condition, not fit for description, probably belongs here though the female has not been described.

Gomphus sp. ? Two females. These are teneral, and Mr. Williamson hesitates to give them a specific name.

Anax junius Drury. Two males; 2 females; common about woods and slough north of Waterloo. One of the earliest, species out in the spring. As many were seen patrolling the open woods as about the water.

Nasiaschna pentacantha Rambur. A male and a female from slough north of Waterloo.

Macromia illinoiensis Walsh. Three males and one female, from slough north of Waterloo.

Tetragoneuria cynosura Say. Nine males, three females; taken late in the afternoon along the bank over the water in the shade near the edge of Waterloo.

Epicordulia princeps Hagen. Fifteen males, 22 females; found in great numbers at north end of slough at Waterloo. They were perched lengthwise on branches and twigs in the sun. Frequently several would be strung along on a drooping twig close together so that three to five could be taken with a single stroke of the net. All were recently emerged.

Leucorhinia intacta Hagen. Five males, 2 females.

Mesothemis simplicicollis Say. A male and a female.

Pachydiplax longipennis Burmeister. Nineteen males, seven females; very abundant about slough north of Waterloo. Found perched above the water with wings drooped, getting the full benefit of the sun.

Libellula basalis Say. Scarce; two males, taken from weeds

a short distance from the water's edge at the slough north of Waterloo.

Libellula pulchella Drury. Sixteen males; four females; abundant about sloughs at Elk Run and north of Waterloo. Females found about the water only when they came to oviposit.

Plathemis lydia Drury. Nine males, four females; common about the mouth of the little stream in slough near edge of Waterloo.

Texas Notes.—III.

BY E. DWIGHT SANDERSON.

The Chinch Bug in Texas.

But little has been written concerning the common chinch bug (*Blissus leucopterus*) in the Gulf States. In endeavoring to devise means for its control in Texas several notes of general interest were made.

The region affected by the chinch bug in Texas is largely coextensive with the grain belt, but injury occurs south into the central part of the State as far as Brazos County, about 125 miles north of the Gulf. South of this we received no complaint of damage. The adult bugs hibernate over winter in fields of small grain, in the stalks and stubble of corn, under bark of logs, and seemingly in any sheltered situation. We have found them numerous in the hollows made in the stem of the bull nettle (*Solanum rostratum*) by the little beetle *Trichobaris texana*. They emerge in March or April according to the season. In 1903 they were first noticed in north Texas the second week in April. At College Station they were numerous on the 20th, but oviposition did not take place until about May 1. In 1904, the season being unusually early, straggling specimens were observed at College Station March 7th. On March 30th they were common on volunteer sorghum, though none on corn, and first copulation was observed. In 1903 the first young nymphs were observed May 8. On May 21 the first instar was still most abundant, though a few in the second instar were found. June 4 some had reached the

so-called pupa stage, though a large proportion were still in the first instar.

June 11, 1903, the first adults of the new brood were found and most of the nymphs were ready to transform. The first eggs were laid April 2, 1904, as far as observed in the field. On April 23 a few nymphs in the second instar were observed. Nymphs in all instars were secured April 28, but no eggs. On May 14 nymphs in the second and fourth instars were observed and hibernated adults were very scarce. The spring rains caused a high mortality this season and further observations are lacking. Prof. Webster (Bulletin 15, Bureau Entomology, pg. 19) quotes Dr. Shimer as stating that the adult develops 57 to 60 days after the deposition of the eggs. Though the above data are not conclusive, yet from the field observations it is evident that the development from oviposition takes place in at least 45 days and possibly less. A second generation seriously damages sorghum and late planted Mexican June corn in July and August. I have no recorded observations concerning a third brood, but am quite certain that a third generation is developed before hibernating for the winter.

The habits and injury done by the bugs are quite variable, making their control much more difficult than further north. When the adults emerge from hibernation in March or April they may fly directly to the young corn just appearing above the ground. They are frequently observed flying or alighting on horses at this season. Furthermore, they will often be found in spots here and there over a large field of corn. In other instances, however, they seem to remain mostly on oats and wheat, so that when the latter are cut in June they migrate to corn as further north.

Upon the young corn from a half dozen to as many as thirty will be found on a hill in which the plants are not three inches high. In many cases replanting in spots is necessary. The most serious injury is done by the adults of the next generation late in May or early June, when the corn is about knee or waist-high. Having bred in the corn field and not migrating to it, as a rule, as in the North, the bugs are very abundant over the entire corn field. The usual methods of control prac-

tised in the North to prevent migration are therefore inapplicable. In other cases, however, the first generation develops on small grains, more particularly spring oats, and migrates when they are cut to corn, which is then badly injured. Millet and sorghum seem to be favorite food plants, and we believe if properly handled might be used as catch or trap crops, as some preliminary experiments made in 1904 and the experience of practical farmers indicated.

Needless to state, in Texas as elsewhere, injury is the worst in dry seasons. In 1901 and 1902 the drouth and chinch bugs caused a well-nigh total failure of the corn crop of northern Texas. Old residents who moved to Texas from Illinois where they had known the chinch bug have stated that the pest was injurious forty years ago, though possibly more so, as the land has been brought entirely under cultivation.

Although no entirely successful remedial measures were discovered for the control of the first generation on corn in the spring, some proved so promising that they are worthy of record.

Both young corn plants but a few inches high, and those nearly ready to tassel, were sprayed with an emulsion made with three gallons of crude Beaumont oil, $1\frac{1}{2}$ pounds of soap, emulsified and diluted with a barrel of water, thus giving about 6.6 per cent. of oil. This was fatal to all bugs hit and did no injury to the plants. As Beaumont oil is very much cheaper than kerosene, emulsions made with it are worthy of trial for other purposes in the southwest. Though all the bugs upon the young plants might be killed by the spraying, yet in a day or two others would arrive and thus to be effectual the spraying would need to be repeated, which is hardly possible on large acreages. For the older corn the spraying, if the bugs are abundant enough to threaten serious injury, is more feasible and profitable.

It was noticed that when the hibernated bugs migrated to corn in the early spring they were much more abundant upon fields which had been cultivated and the earth was in clods. Where the soil had been packed tightly around the plants by rains and had not been loosened there were few bugs.

This was also true to a certain extent in oat fields. Clearly the bugs preferred a soil with numerous cracks in which they might hide and oviposit. This being the case, it seemed probable that if a liberal application of tobacco dust were applied to each hill of corn they might be driven off. Field experiments were therefore instituted to test the value of this remedy. It was found that where strong winds did not blow the dust away the bugs were almost entirely killed by it, a dozen or so being found dead at each hill. Usually in about an hour after application the bugs remaining at the hill were stupefied. The action of the tobacco dust on these insects is rather unique, being comparable to a moth flying to its death in a flame, for both are the result of tropisms.

The chinch bug seems to be very clearly and decidedly stereotropic, to use the term coined, I believe, by Prof. Jacques Loeb. Possibly they are also geotropic, but this is not so clear. In other words, the chinch bug has an instinctive attraction for a crevice or coarse loose soil. This is incidental with the oviposition of the hibernated brood. Neither geotropism or negative heliotropism seem to explain the phenomena. That an insect should so instinctively remain in a substance which soon causes its death, and the odor of which is enough to drive many insects from plants, seemed so unusual that some laboratory experiments were made to further show this point. May 3, 1903, Mr. Wilmon Newell placed 27 adult bugs in a box and covered with tobacco dust. After two and one-half hours the dust was removed, none having escaped, though they might easily have done so, the box being uncovered and the dust shallow; of the 27 but 7 revived. Thirty bugs were similarly placed under tobacco dust the same day for three hours, but one of them reviving. Twenty-one bugs were placed in a small box and covered a half inch deep with tobacco dust. Three crawled out. Four others crawled to the surface, two remaining upon it and two crawling back in the dust. At fifteen minutes all were stupefied. At end of seventeen minutes three bugs were removed from the box and placed on the table. In sixty minutes one crawled off, and in eighty minutes another revived. Twenty-two minutes after the experiment was started, five

were removed; eighty minutes later two crawled off: twelve hours later all had revived, though some were still stupid. At the end of thirty-two minutes, five more were taken from the box; one hour later one crawled off, and thirty-six hours later two were found dead; at forty-seven minutes six were removed. Four of these were dead thirty-six hours later.

Again, to show the attraction of the loose dust or soil for the bugs, for they would undoubtedly crawl into sawdust equally readily, ten bugs were placed on the surface of a half inch of tobacco dust. All crawled into it at once. Three subsequently crawled out and away. None remained on the surface, though near it. In ten minutes all were stupefied and were removed and exposed to air. Some of these had recovered ninety minutes later and all revived in a few hours.

Thus the bugs crawl into the tobacco and remain there, where they are stupefied by its fumes sometimes in ten minutes. If allowed to remain forty-five minutes, two-thirds at least are killed. As a matter of fact, where a pile of tobacco dust remained undisturbed around a plant the mortality would be almost entire, for as soon as stupefied the bugs would remain in it undisturbed. However theoretically plausible the method may seem, it will not be practicable in Texas owing to the constant strong winds, which soon scatter the dust. Its action on the bugs is, however, of interest, and might be put to practical use in the case of the false chinch bug, which has very similar habits when working on garden vegetables.

The best means of control for the chinch bug in Texas, and one which practical farmers have found satisfactory through their own experiments, is the destruction of all corn and sorghum stalks or stubble left in the field and the general cleaning up of all places favorable for hibernation as far as possible. Sorghum stubble seems a particularly favored place of hibernators. Especially is this necessary where sorghum and June corn are grown late in the summer and early fall, thus furnishing abundant succulent food for the later generations, and the volunteer plants forming food in early spring. Indeed, to these late fodder plants may be largely attributed the destructive numbers of the chinch bug in early spring upon young

corn, and injury seems to be the more general where they are most grown. The practical control of this pest in Texas offers one of the most interesting and valuable problems to the economic entomologist, which must be solved by demonstrating the general methods of culture which will control the pest as has been done so effectively with the cotton pests.

Conocephalus lyristes.

BY JAMES A. G. REHN.

Early in the year 1905 the author described this species on the basis of a single male individual from Chokoloskee, Monroe County, Fla.*. During the summer of 1905 a number of specimens of this genus came into my hands for study, among them being six specimens which closely resembled the Florida form, the type of which was at that time not accessible. In the meantime, Mr. William T. Davis had published a record of *Conocephalus nebrascensis* Bruner, from Lakehurst, N. J., the determination having been made by Mr. Caudell,† and to fully determine the relationship of the latter species to the individuals in hand, I secured, through the kindness of Prof. Bruner, an individual of his species. This, with the type of *lyristes* now available, shows my seven specimens to be true *lyristes*, which is not closely related to *C. nebrascensis*, the latter being a species of no greater size but of a more robust build, with broader tegmina, wider and more arcuate tympanum, more expanded caudal section of the pronotum, and deeper lateral lobes of the same.

The specimens of *lyristes* mentioned above, in addition to the type, are as follows:

Ocean City, Worcester County, Md., July 21, 1905. Collected by E. Daecke. 1 ♂, 1 ♀.

Stafford's Forge, Ocean County, N. J., September 16, 1905. Collected by Morgan Hebard. 3 ♂, 1 ♀.

*Proc. Acad. Nat. Sci., Phila., 1905, p. 45, pl. 1, figs. 8 and 9.

†Canad. Entom., xxxvii, p. 289.

Measurements (in mm.) of the specimens examined are as follows:

	LENGTH OF BODY.	LENGTH OF ROSTRUM.	LENGTH OF PRONOTUM.	CAUDAL WIDTH OF PRONOTUM.	LENGTH OF TEGMEN.	GREATEST WIDTH OF TEGMEN.	LENGTH OF CAUDAL FEMUR.
<i>C. nebrascensis</i> Bruner, Moline, Ill., ♂	30.5	3.	8.2	5.5	37.2	6.7	21.
<i>Conocephalus lyristes</i> Rehn, Chokoloskee, Fla. (type), ♂	30.5	3.1	7.6	4.9	39.2	5.	21.
Ocean City, Md., ♂	30.5	2.2*	8.1	4.8	36.2	5.4	21.5
" " ♀	31.7	3.	7.5	4.5	43.	4.5	22.
Stafford's Forge, New Jersey, ♂	30.5	3.1	7.7	4.6	40.	5.2	20.8
Stafford's Forge, New Jersey, ♂	30.5	3.5	8.	4.8	38.2	5.5	20.8
Stafford's Forge, New Jersey, ♂	29.	3.2	8.	4.6	39.4	5.4	21.5
Stafford's Forge, New Jersey, ♀	28.2	3.4	6.7	3.8	42.	5.1	20.5

The tympanum of the type of *C. lyristes* measures 7.5 mm. long by 4.8 mm. in greatest width; in the specimen of *C. nebrascensis* it is 7 long by 5.6 in greatest width.

PLEASE read the editorial notice in this issue in regard to subscribers.

ON PRONUNCIATION OF ENTOMOLOGICAL NAMES.—I. Has any code or organization fixed the pronunciation of scientific names, e.g. the A.O.U. code, or the International Congress of Zoology?

2. How should entomological names be pronounced? By the rules of what language? Can any one reconcile the fact that English-speaking botanists use the Continental pronunciation and English-speaking entomologists use the American method or a hybrid?

3. Why do American scientists insist that the English system should be used, when they are vastly in the minority, when the world's scientists are concerned.

More in detail: a. when is the penult long, when short? b. is the antepenult always accented? c. how should the vowels be pronounced? how should ch, ae, cc, j, g; c followed by a, u, o; c followed by i, e, y be pronounced?—ANONYMOUS.

*Not complete.

Number of Eggs of *Samia cecropia*, *Pulvinaria innumerabilis*, and *Culex pipiens*.

JOHN J. DAVIS, Urbana, Ill.

Samia cecropia Linn.

The following table gives the number of eggs laid by individual females of *Samia cecropia*. As is shown in the table there is a wide range in the number of eggs laid by different individuals, this varying from 119 to 366, but these are apparently exceptions to the rule as most of the counts range between two and three hundred. The cecropia cocoons were kept in the laboratory for part of the winter and for this reason the dates of emergence are earlier than they would be normally.

NUMBER.	DATE WHEN FIRST FOUND MATING.	DATE WHEN EGG-LAYING BEGAN.	NUMBER OF EGGS PER FEMALE.
1	8 A. M., May 10, 1905.	Evening of May 11, 1905.	161
2	" " " "	" " " "	213
3	" " 12 "	" " 13, "	220
4	" " " "	" " " "	238
5	" " " "	" " " "	236
6	" " " "	" " " "	207
7	" " " "	" " " "	293
8	" " " "	" " " "	267
9	" " 14 "	" " 16, "	355
10	" " " "	" " " "	219
11	" " " "	" " " "	240
12	" " 16 "	" " 17, "	284
13	" " " "	" " " "	239
14	" " " "	" " " "	209
15	" " " "	" " " "	119
16	" " " "	" " " "	238
17	10 A. M., Apr. 17, 1906.	" " Apr. 18, 1906.	298
18	A. M., " 17, "	" " " "	366
19	10 A. M., " 14, "	" " " 16, "	200
20	" " " 18, "	" " " 19, "	276
Total			4878
Average per female			243.9

Pulvinaria innumerabilis Rath.

In the proceedings of the Davenport Academy of Natural Sciences, Vol. II., p. 331, Mr. J. D. Putnam says, "The entire

number of eggs laid in each nest is rarely if ever less than 500, and must often exceed 2000, though as I have not attempted to count the number in the larger nests this is only an estimate." * * * "Dr. S. S. Rathvon states, in his paper in Pennsylvania Farm Journal, 1854, that he counted in one of these nests 564 living insects and over 300 eggs not hatched." Mr. S. A. Johnson, in Bulletin 116, of The Colorado Agri. Exp. Sta., says, "The number as given by the older entomologists is from one to two thousand. These figures are probably somewhat too large and more recent writers have reduced the estimate. Cotton mentions from three hundred to one thousand and Sanders says that the number may reach fifteen hundred."

The egg masses counted were from individual females and no choice was made as to the size. They were taken at random and are examples of the average-sized nests. All were collected June 19, 1906, at Lincoln Park, Chicago, Ill.

The following table shows the number of eggs per nest:

NUMBER	1	2	3	4	5	6	7	8	9	10	TOTAL
NUMBER OF EGGS PER NEST	3863	3814	3279	3674	3024	2856	3200	3286	3345	3761	34102

Average per nest 3410.2.

Culex pipiens Linn.

The following table shows the number of eggs in single egg masses of the common house mosquito, *Culex pipiens*, the average of the ten masses being 178.4 eggs per mass.

NUMBER	1	2	3	4	5	6	7	8	9	10	TOTAL
NUMBER OF EGGS PER MASS	162	228	257	309	120	149	121	136	143	159	1784

Average per mass 178.4.

Some New or Little-known Genera of Empididae.*

A. L. MELANDER, Pullman, Washington.

In the following pages are noted the occurrence in North America of several genera of the dipterous family Empididae, that are not given in our publications. Their publication is given at the present time in order to explain more fully the citations that will appear in the forthcoming edition of Dr. Williston's Manual.

TACHYDROMIINÆ.

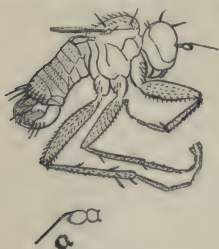
CHERSODROMIA Walker.†

This genus is known from six European species and one from Australia. We have one described species in our fauna that belongs to this genus. It is *Stilpon houghii* Melander, placed in Professor Aldrich's Catalogue of the North American Diptera in the genus *Coloboneura*.

THINODROMIA gen. nov.

Thinodromia inchoata spec. nov.

Thick-set, black, pruinose, black-bristly little species with dorsal arista and aborted wings. Eyes deeply emarginate at the antennæ, the facets uniformly large: face and front of male and female similar, of equal length and uniform breadth, gray pruinose; the hollowed vertex also gray pruinose, with three large ocelli, and strong ocellar bristles; occiput gray pruinose, the occipital bristles moderate; palpi large, flat, elongate-ovate, white pruinose, with a few black hairs, overlapping the proboscis; proboscis very stout, pointed, bent back; antennæ three-jointed, though the first joint minute, the third joint short-ovate with a long arista arising from near the middle of its dorsal side, the basal joint of the arista short, the outer long and microscopically plumose.



Thinodromia inchoata—a,
antenna.

The pollen covering of the dorsum of the thorax more or less golden; mesopleura with a polished black area not pruinose; humeri not constricted; humeral and supra-alar bristles large, acrostichal and dorso-

*Contributions from the Zoological Laboratory of the State College of Washington.

†(Ins. Brit. I. xx., p. 137, 1851.)

central rows small, between the dorsocentrals and the pleura are a few irregular bristles; scutellum with two long and two outer short bristles; pleura without bristles.

Abdomen short-cylindrical, but very robust, in the male, the bristles becoming longer posteriorly, those of the seventh segment nearly as long as the last four segments; each segment with a single large lateral pit; hypopygium large, globose, closed, somewhat asymmetrical and twisted to the right, the small apical organs nearly dorsal, the hypopygium is less pruinose than the anterior portions of the body, posteriorly with long black bristles.

Legs short, robust, piceous-black, rather closely covered with short black bristles, those of under side of front femora and of outer apical side of hind femora more prominent, all the femora moderately thickened, the tarsi somewhat flattened distally.

Wings vestigial, more or less triangular in outline, horizontally extended over the abdomen, though reaching only to the third segment, opalescent gray, a spot including the marginal cell and another around the posterior cross vein infumated; veins yellowish, costal cell and the first two basal cells distinct, marginal cell much shortened, humeral cross vein distinct, no trace of anal veins, costa bristly.

Length, 1.25 to 1.50 mm.

This species was collected in some numbers at Monterey, California, by Professor J. M. Aldrich, in May of this year. The flies were running over the hot dry sands above the sea beach in company with *Parathalassius aldrichi*, hereinafter described. Professor Aldrich states that the species could be easily caught by scooping an individual, sand and all, in one's hand. The insect would run to the edge of the hand and could be readily dropped in the collecting bottle. It is rather strange that the swarms of these two interesting species should have been overlooked by the previous collectors in that neighborhood.

Professor Mario Bezzi in his paper, "La Riduzione delle Ali nei Ditteri,"* mentions but two species of Empididae with shortened wings. Both belong to the same sub-family as the present form. *Tachista microptera* Loew lives about stones in the inland; *Chersodromia arenaria* Haliday is from the sea-shore.

*Rendiconti d. R. Inst. Lomb., Vol. xxxiii, 1900.

SYMBALLOPHTHALMUS Becker.*

But one species, *S. dissimilis* Fallen from Europe, has been included in this genus. *Elaphropeza montana* Melander is a slender species much like *dissimilis* which may well be placed in the genus *Symballophthalmus*. There are also certain species described as *Platypalpus*, e. g. *canus*, *inops*, *hians*, which agree better with *Symballophthalmus* in that they lack the spur of the middle tibiae and have the two basal cells of the wings equal.

It may be stated in this connection that *Elaphropeza* can be considered but as a subgenus of *Drapetis*. The type (*E. ephippiata*), which is the only European species, and the seven other species, all exotic, differ from *Drapetis* only in a comparative lengthening of the last antennal joint. Throughout the western United States we have a very common species of *Drapetis* (*D. unipila* Loew); which naturally shows some variation. An extreme form, which I reluctantly described as *medetera*, for I hesitated a long time before concluding it to be specifically distinct, has the third antennal joint twice the normal length. Inasmuch as there are intergrades it is unwise to give this single character generic value; cf. D. W. Coquillett, Proc. ent. soc. Wash., 1903, p. 265.

HYBOTINÆ.

PRORATES gen. nov.

Head globular but depressed, the face extremely short. Eyes contiguous on front in the male, the facets of the upper two-thirds enlarged: antennæ two-jointed, the first joint minute, the second compressed, conical, without a style or arista: proboscis rigid, shorter than height of head, projecting horizontally forward.

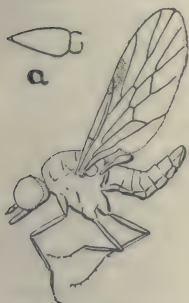
Thorax but little convex, one prealar, one supra-alar, and two scutellar, but no other bristles present: tegulæ minute, with white cilia. Legs slender, nowhere thickened, devoid of bristles, pulvilli minute. Abdomen slender; genitalia blunt, conical, not enlarging the diameter of the abdomen, entirely included within two lateral valves, no projecting parts.

*Wien. ent. Zeitg., viii, 285, 1889.

Wings broad, anal angle rectangular, auxiliary vein ending in the costa at the middle of the wing, the costa extends to the third longitudinal vein; a black elliptical stigma surrounding the tip of the first vein; joint origin of the second and third veins arising nearer the humeral than the anterior cross vein; third longitudinal vein furcate before the middle of the first posterior cell: discal cell pentagonal, emitting two posterior veins of which the anterior is furcate; none of the posterior veins attain the wing margin; all the basal cells large, the discal cell small; anal cell longer than the second basal, its outer angle acute, anal vein reaching the wing margin.

Prorates claripennis nov. spec.

Male.—Length, 3 mm.—Black over all, dorsum of thorax olivaceous, with two fuscous vittæ, pleura and occiput lightly cinereous, abdomen not dusted. Occiput and abdomen with very fine pale scattered hairs. Legs entirely black. Wings pure hyaline, the stigma and veins blackish. Halteres black.



Two males, collected by Mr. H. L. Viereck, at Highrolls, New Mexico, June 12 and 13, 1902.

OCYDROMIINÆ.

PARATHALASSIUS Mik.

Prorates claripennis—a,
antenna.

The genus *Parathalassius* was erected by Professor Joseph Mik* for a small silvery-gray species collected on the sands near Venice, in May. The species was found in a search for the Dolichopodid *Epithalassius*, but it was not discovered until the collected material was worked over, owing to a remarkable resemblance between the two species. Only females of the Empidid were taken, although apparently the species was very common.

In May of this year Professor J. M. Aldrich chanced on a similar silvery-gray form sporting on the arid sands at Monterey, California. Although no specimens of the European

*Wiener Entomologische Zeitung, X Jahrg., p. 216, 1891.

species are at hand for comparison, the agreement of our form with Professor Mik's description makes us believe the two forms to be congeneric. Like so many of the other Diptera living on the sand,* *Parathalassius* is conspicuous by its dense coating of pollen. Even the hairs and bristles are glistening white, so that the males especially, when viewed from in front, are ornate with a silvery sheen.

The European species (*P. blasigii*) possesses several conspicuous white hairs on the under side of the hind femora, and these are lacking in the California form. Moreover, in *blasigii* the first posterior cell is narrowed at its apex. Otherwise, our species tallies well with Mik's description.

***Parathalassius aldrichi* sp. nov.**

Male.—Length, 2.75 mm.—Entirely silvery-gray pruinose, all the bristles white. Vertex broad, concave, silvery pruinose: ocelli widely separated; one pair each of vertical, frontal, and ocellar bristles; face very narrow below the antennæ, concave, broadening at the convex clypeus, closely covered with short silvery-white pubescence, lower facets of eyes large, those of the lowermost third concealed by a dense covering of silvery-white scale-like hairs. Eyes not at all emarginate at antennæ. Antennæ black, three-jointed, though the first two joints are minute, third joint short-oval, pointed, with a long terminal bristle-like arista. Occiput silvery-gray pruinose, occipital bristles seriatly arranged below, and forming a ciliate fringe to the eyes. Proboscis and palpi minute, blackish.



Parathalassius aldrichi
and face of male.

Thorax silvery-gray pruinose, the dorsum with scattered short white hairs, and with eleven pairs of short achrosticals, six pairs of long dorsocentrals, three pairs of supra-alar and three long humeral and posthumeral bristles: scutellum with four marginal bristles, no pleural bristles.

Abdomen short, with numerous white hairs, when viewed from above or the right, with but four visible segments, the second segment longest and bearing a basal transverse row of black pores. Hypopygium very large and globular, comparatively bare though pruinose, asymmetrical,

*e. g. *Lipochaeta*, *Thinophila*, *Thereva*, *Stichopogon*, etc., and the Empidid genera *Schistostoma*, *Coloboneura*, *Halsanulotes*, and *Chersodromia*.

attached to the left side of the body and bent forward and to the right, thereby crowding the small fifth, sixth and seventh segments to the left of the median line.

Legs slender, white bristly, middle tibiae with small white apical spurs, the joints of the middle tarsi with small black apical spurs, under side of front femora and sides of hind femora ciliate with longer white bristles; pulvilli broad, empodium hair-like.

Halteres white. Wings whitish, veins strong, blackish, less dark basally, base of costa with a few white bristles, third longitudinal vein simple, four posterior cells, anal cross vein perpendicular to the anal vein.

Female.—Differs from the male as follows: Facets of eyes uniform, nowhere concealed by pubescence. Abdomen with five dorsal flattened segments, its apex jet black.

Over two dozen specimens of this species were saved by its collector. The type locality is the dry sands in back of the beach at Monterey, California. It gives me much pleasure to be able to dedicate this species to my dear friend and neighbor, Professor J. M. Aldrich, who discovered this interesting fly, and to whom we are indebted for a large proportion of what we know of the species of this family.

***Parathalassius candidatus* sp. nov.**

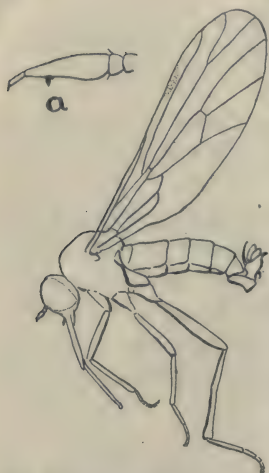
After the description of *Parathalassius* was sent to the ENTOMOLOGICAL NEWS, Professor Aldrich discovered among his collections another specimen of the genus, but which, on account of its larger size and more bristly appearance, is distinct from the Californian form. This individual, a female, was collected at Friday Harbor, San Juan Co., Washington, during the summer of 1905. Professor Aldrich is its discoverer also.

Female.—Length 3 mm., length of wing 3.25 mm.—This species differs from the preceding only as follows: Face slightly broader; hairs of occiput more dense. Dorsum of thorax with two narrow black vittae, each of which is bounded by rows of bristles, so that there are four rows of dorsocentrals, with about fourteen bristles to each row. Between the acrostichal bristles and the humeri is a close aggregation of short bristles, which are represented in *P. aldrichi* by a few bristles only. Scutellum with six marginal bristles. The three black pits along the lower edge of each abdominal tergite are large and conspicuous. Ovipositor large, trough-like, exerted backwards from under the last segment. Bristles of legs stronger, not recumbent but projecting; spurs

of middle tibiæ much reduced; hind metatarsi somewhat compressed; tarsi entirely black. In *aldrichi* the base of the metatarsi is somewhat yellowish. Anal vein three times the length of the anal cross-vein, in *aldrichi* it is less than twice as long as the cross-vein.

EMPIDINÆ.

TOREUS gen. nov.



Toreus neomexicana—a, antenna.

Male.—Entirely devoid of bristles. Eyes broadly separated, the lower facets larger: basal joint of antennæ small, last joint twice as long as the basal joints together, compressed conical, rather blunt; the style one-eighth the length of the third joint. Proboscis three times the length of the head, the rigid rostrum three-fifths the length of the labella: palpi short and incumbent. The proboscis extends downward and somewhat forward, and not backward, in the dried specimen.

Thorax entirely without bristles, no metapleural setæ. Abdomen robust, cylindrical, somewhat depressed apically, consisting of but six segments, the seventh forming a horizontal inverted hood-like peduncle to the hypopygium; no pits visible on any segment: hypopygium consisting of two triangular chitinous lateral claspings valves, which enclose a pair of upright decussating flattened filaments; intromittent organ curved and pointed, projecting downward from between the bases of the lateral valves; arising from the inner base of the hypopygium are a pair of curved slender diverging filamentous appendages which project above the height of the hypopygium.

Legs not long, without bristles, but with fine hairs, without apophyses or thickenings, front metatarsi two-fifths the length of the hind ones, hind tibiæ bent outwardly at their middle, pulvilli small.

Wings rather broad, anal angle broadly rounded, costa encompassing the entire wing, anal vein not or but little continued

beyond the anal cell, auxiliary vein straight, vanishing at the middle of the wing, remaining veins attaining the wing margin, the two basal cells equal in length, the anterior branch of the third vein sinuous, rather long, the second submarginal cell but slightly longer than the first along the costa.

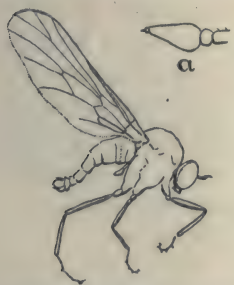
Type: *Empis neomexicana* Melander.

ANTHEPISCOPUS Becker.*

Becker has described two European species of *Antheopiscopus*, *caclebs* and *ribesii*, and there is one from New South Wales (*antipodalis* Bezzi). We have a species collected at Seattle, Washington, which agrees with the description and figure of *ribesii*, but in the absence of typical specimens for comparison I hesitate before deciding as to its specific identity.

HESPEREMPIS gen. nov.

Male.—Eyes separated, broadly above and narrowly below the antennæ, the facets uniform in size. Antennæ inserted high, the triangular front therefore short, three-jointed, the first two joints together as long as the third, the third joint conical, compressed, with a short two-jointed style. The first joint of the style is thick, the second very slender. Proboscis very short, sharp and incurved, as in *Hormopeza*, etc. Palpi broad, slightly longer than the proboscis, and recumbent upon it, the upper surface with a few fine hairs. Ocellar triangle without bristles, occiput with a few fine short hairs, face bare.



Hesperempis mabelae Mel.—
a, antenna.

Thorax entirely without bristles, scutellum with six fine marginal hairs, metapleura bare. Abdomen slender, provided with few fine marginal hairs only; a transverse series of minute pits present at the base of the second abdominal segment: hypopygium terminal, flattened above, globular otherwise, not enlarged, entirely enclosed in a pair of convex lateral pieces, with no dorsal or terminal processes. Legs slender, simple, rather sparsely provided with fine pubescence, but entirely devoid of bristles; pulvilli small, empodium microscopic.

*Wien. ent. Zeitg., X., 281, 1891.

Wings long slender, anal angle obtuse, not prominent, costal vein encompassing the entire wing, auxiliary vein straight, vanishing at the middle of the wing, stigmal spot faint, elongate, third vein branched, the anterior branch long, as in *Hilara*, discal cell narrow, acuminate apically, second posterior cell narrowed at the base, the contact of the third and fourth posterior cells with the discal cell equal, anal vein shortened, anal cross vein recurved and fused with the anal vein.

This description is drawn from an enigmatical little fly described as *Rhagas mabelae*. The insect is evidently an Empidine, but can not be assigned to any genus hitherto described. Its nearest relatives are *Rhagas*, *Haplomera*, *Hilarempis* and *Hilara*.

The main characters by which these genera differ from *Hesperempis* are herewith given:

Rhagas: Eyes of male contiguous; body with macrochætæ; anal angle of wing rectangular.

Haplomera: Femora thickened; third antennal joint long and nearly cylindrical.

Hilarempis: Body and legs with macrochætæ; anterior branch of third vein short.

Hilara: Auxiliary vein short and bent forward at tip.

In the Transactions of the American Entomological Society for 1902, page 277, I associated *Empis conjuncta* Coquillett with the present species as the American species of the genus *Rhagas* Walker. Mr. Coquillett* subsequently assigned *Synamphotera* Loew, which is a genus of the sub-family Hemerodromiinae, as a synonym of *Rhagas*, and in his table stated that *Rhagas* has the anal cross vein perpendicular to the wing axis. In this he was in error: both forms are valid genera, in no ways related, for *Rhagas* is clearly an Empidine. I have since seen *Empis conjuncta*. It and *Empis triangula* Coquillett are normal species of the genus *Iteaphila*.

Through the kindness of Dr. K. Kertész, of the Hungarian National Museum, I have been put in possession of both sexes of *Rhagas unica* Walker, the type species of the genus. It is quite a different form from *mabelae*. Its salient characteristics

*Proc. Ent. Soc., Wash., 1903, p. 257.

are the following: Wings broad, anal angle strongly rectangular. Eyes of male contiguous. Arista, nearly one-half the length of the third antennal joint, its basal segment much thickened and many times longer than the minute, bristle-like apical portion. Dorsum of thorax with the usual rows of small but distinct macrochætæ; those of the scutellar margin larger and six in number. Hypopygium terminal, small, but open, consisting of a pair of lateral slender curved and pointed valves, surrounding the sharp penis, and a basal dorsal pair of erect prongs, like those of *Iteaphila*, etc.

A new variety of *Papilio rutulus* Boisd.

BY HENRY SKINNER.

Papilio rutulus arcticus.

Smaller than *rutulus*, expanding from the centre of the thorax to the tip of the primary wing 43 mm. Orange spot at angle of secondaries large and distinct, generally absent in *rutulus*. Marginal lunules of secondaries wider and not so elongate as in *rutulus*. Blue bands of secondaries below narrower and more distinct. Marginal lunules of secondaries below orange, an orange wash running to the cell.

Described from six males and one female. Five males and one female from Eagle City, Alaska, June 1st to 15th. One male from Athabasca River, Canada.

A New *Syntomeida*.

BY HENRY SKINNER.

S. befana n. sp.

Antennæ blue-black, outer third edged with white. Head and thorax blue-black; vertex of head with metallic-blue patch; tegulæ and patagia orange-yellow, edged with black; fore coxæ orange; legs blue-black, with tarsi streaked with white; abdomen black and metallic-blue; oval, orange subdorsal patches on the second to the last segment, those on first segment being quadrate; on abdomen below are orange bands on segments three to six. Forewing with an orange patch in and below middle of cell and a patch beyond the cell. Hindwing with a basal orange patch and a round patch in centre of wing.

From one specimen taken by Prof. F. H. Snow in the Baboquivari Mountains, Arizona. The species is related to *joda* Druce.

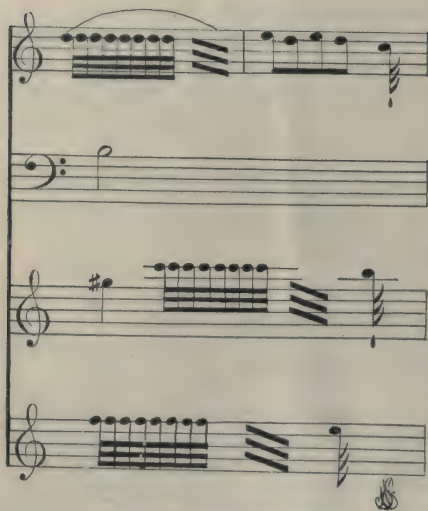
The Song of the Mosquito.

BY SAMUEL E. WEBER.

When we know the voice and song of the birds we are enabled to distinguish the particular species whose song we may hear without seeing it. Likewise in entomology, insects need not be seen to know their species if one knows their voice and song.

Most species which we have studied may be known psychologically by their song, their movements and physical expression. Insect sound is in large measure as true to structure as is physical expression in various other forms of animal life.

As an example in physical expression and structure, take the larva of the *Anopheles* mosquito which has been designated



Anopheles maculipennis Meig.
Anopheles punctipennis Say,
Culex canadensis Theob.
Culex pipiens Linn.

as "a lazy larva." Some of their slow movements on the surface of the water are apparently caused by the arrangement of the mechanical structure which retains them there. When the larva turns its head to the caudal extremity to remove foreign particles which have collected about the air-tube, it does the act as gingerly as though it were afraid its body might break in twain. The reason for the slow turning is explained by its attachment to the waterfilm

through the means of fan-like bodies on the dorsum of the abdomen. These organs after piercing the waterfilm open out forming a palmate clinch by means of which the larva is retained at the surface. The slow movement is necessary so it

may retain its hold in the act of arranging the toilet at its caudal end. If the turning or any other larval movements are made too quickly the hold is lost and the larva will sink.

By the expression of sound, studied at the keyboard, I have determined, without seeing them, some of the more important species of mosquitoes by their song or note. These observations were made in the eastern section of Pennsylvania.

The note of *Anopheles maculipennis* (Meig.) is D, virtually the first degree to the right of middle C, on the keyboard, which is one octave lower than the notes on Staff No. 1. When confined in a bottle and darting against the glass it will sing a note higher, and when alighting on the glass to rest, it will do so, at a staccato stop at one degree below. It seems to produce the same song in distress as in pleasure, for the same may be heard in confinement, as that when about to fathom one's blood. The ordinary hum of this species may be expressed by the thirty-second notes on Staff 1. The second part of the song may be termed as one of condition (in distinction from the love songs of insects), since the eight note at E, is sung only when darting against any object such as the glass mentioned or a person's neck or face. The part indicated by the eight notes may be continued much longer than the time here represented, and the finale or sudden stop when alighting is expressed by the staccato thirty-second note at the end of Staff 1.

The note of *Anopheles punctipennis* (Say) is B, virtually the first to the left of middle C, on the keyboard, as indicated by Staff 2, written in the F clef.

Staff 3 in the treble clef indicates the note of *Culicada* (*Culex*) *canadensis* (Theo.). The smaller variety, the most common, sing high C. Some of the larger forms of this species sing from F to F sharp and to G sharp. When the range of the note, in the same species, varies as is shown on this staff, then intonation or the peculiarity of voice plays the part of differentiation. This must be admitted, however, as a high state of the perceptive powers of man, which is possessed by very few persons. In the range of sound produced by the various species from the giant culicid *Psorophora ciliata*

to the smaller species approaching high C we have some species which come close to one another in their note when heard flying close to the ear. *C. canadensis* and *C. sollicitans* in some instances come closely, but the latter may be easily distinguished by its peculiar beautiful quality of tone.

Culex pipiens (Linn.) (No. 4) sings in F, as a rule, but some specimens may vary a note higher or lower and may then be distinguished by the same method mentioned. While these observations may not be of any practical value they are nevertheless of interest in a certain direction. The trained ear at least may distinguish the more dangerous species of mosquitoes from the harmless by their notes.

The Method of Feeding in *Leptoglossus*.

BY A. ARSENE GIRAULT.

The following observations on the feeding-habit of *Leptoglossus phyllopus* Linnæus appear to be worthy of publication:

On the morning of July 19th, 1906, at Myrtle, Ga., while examining some clusters of Niagara grapes, attention was attracted to an adult male of this species, clinging to some of the nearly ripe fruit. It had apparently just finished feeding, but closer notice showed that it was just on the point of making a puncture. The insect was clinging head toward the ground, and for ten or fifteen seconds examined the surface of the fruit with the tip of the rostrum, with rapid, nervous movements. Locating a suitable spot, the movements of the rostrum stopped, and it was then applied and straightened, necessarily causing an upward inclination of the body. Pressure was then brought to bear, and the rostrum was pushed into the fruit for a distance of about one-half the length of the distal joint of the labium. When about this far in, the labium commenced to bend caudad at the first articulation, exposing basal portions of the inclosed setæ, the mandibles and maxillæ. Pressure was continued, and the body was gradually brought backward and downward, causing the bending of the labium to increase, until its basal joint became applied to the venter of

thorax, followed by the second joint, which was applied to the first. The labium was then released from the puncture, by further backward movements of the body, straightened, and borne in its natural position along the venter. This left the long, slender mandibles about one-third their length within the fruit. Pressure was again brought to bear as at first, and the ever-bending setæ were pushed in quite rapidly for over half their length, when they suddenly stopped, as if by some obstruction, were partly redrawn, and again inserted for the same distance. This was repeated several times before a cause for such actions presented itself. After the fifth attempt to push the mandibles within for most of their length, it was noticed that the much shorter maxillæ, closely applied to the mandibles so as to be inconspicuous, struck the surface of the fruit, whenever the setæ were inserted for more than half their length, and stopped further insertion. Each time that the progress of insertion was thus stopped the mandibles were slightly, redrawn, or sometimes nearly entirely so, and then reinserted until again stopped by the catching of the maxillæ. These movements were repeated twelve or more times, and then the attempt abandoned. Upon withdrawing the mandibles, the labium was raised and the setæ replaced within it by means of the aid of one or both of the fore tarsi.

These actions in feeding were repeated three times in succession on the same fruit. At the end of the second attempt the wound made by the setæ exuded a drop of clear fluid, and through this the insect attempted to reinsert the rostrum into that same wound; the fluid, however, interfered to such an extent as to cause an abandonment of the attempt.

This method of feeding, having the setæ entirely free, is different from any hitherto observed by the writer in the Heteroptera. To what extent feeding is interrupted by the apparent frequent inability to insert the maxillæ is not known.

The feeding-habit described in foregoing is also present in *Anasa tristis* DeGeer, as found by observations made on the nymphs feeding on grass in a squash patch. The method of insertion is almost identically the same, though the movements are much quicker.

New North American Heteroptera.

By E. P. VAN DUZEE, Buffalo, N. Y.

The species described below have come into my hands for study from collectors in various parts of the country during the past five years. It is often annoying and undesirable to have species sent out under MS. names, especially if the publication of the descriptions is long delayed, and this is my excuse for the perpetration of a fragmentary paper such as this. All of these are interesting additions to our fauna, and in each case were received from well known and experienced students of our insects.

Narnia snowi n. sp.

Broader and less narrowed posteriorly than *femorata* and its allies. Pale ferruginous testaceous; head, front of the prothorax, deflected base of the pronotum, scutellum, elytra, pectus, meso- and metapleura and the dilatation of the posterior tibiae black or dark fuscous. Head with the apex and a longitudinal line each side both above and below the base of the antennae ferruginous. Prothorax and pale hind margin of the metapleura coarsely, the scutellum and hemelytra finely and closely punctured; extreme tip of the scutellum and costa of the elytra ferruginous, the middle of the corium with a transverse linear white band, not attaining the costal margin. Hind femora becoming piceous toward the apex, the spines and tubercles black; dilatation of the hind tibiae rather broad, inner margin about twice the width of the outer and marked with a white sub-basal spot, the edge beyond the middle and along the undilated apical one-third sparsely spinose. Venter more or less mottled and infuscated, with a strong sulcus reaching the apex of the 5th segment. Rostrum passing the middle of the fourth ventral segment, blackish, with the basal joint pale. Antennae substantially as in *femorata*. Length 16 mm.

Described from one female specimen received from Prof. F. H. Snow and captured by him at Douglas, Arizona, in August.

I have before me three male and two female examples of a *Narnia* that I take to be *femorata*. In these, however, the basal joint of the antennae is scarcely darker than the others, the humeral angles are not "acute" although more prominent than in the allied forms, and the transverse white vitta on the corium is indicated only by an obscure band of white hairs that may be almost obsolete in some examples; the form of the dilatation of the hind tibiae is, however, exactly as described by

Stal, and for the present I prefer to place it as the northern form of his species. Two of my specimens were taken at Tucson, Arizona, by Prof. E. B. Wilson, two were captured in Yuma Co., Arizona, by Prof. Snow in June, and one was taken at Congress Junction, Arizona, in July by Prof. Snow. Prof. Wilson has also sent me two examples of a smaller paler species from La Jolla, California, that I place as Stal's *pallidicornis*. They answer to his description in everything except that the head is almost entirely black and the rostrum is longer, attaining the apex of the fifth segment. This species has the apical notch of the male genital segment deeper and narrower than in *femorata*.

***Narnia wilsoni* n. sp.**

Deep piceous black; lower surface of the head, antennæ, base of the rostrum, bucculæ and legs bright ferruginous; abdomen testaceous; extreme tip of the scutellum and a transverse linear band on the middle of the corium, not attaining the costa, white. Antennæ shorter and thicker than in any of our other described species, the basal joint scarcely surpassing the apex of the head. Pronotum and scutellum closely punctate. Elytra deep velvety black, with the costa slenderly pale; membrane fuscous black, the nervures undulating and here and there anastomosing. Hind legs piceous-black, becoming ferruginous on the base and outer side of the femora and knees; simple apex of the tibiæ and the tarsi bright ferruginous, tibial dilatation about as in *snowi*, almost linear without, within about twice wider, with a few strong teeth from near the base to the apex of the tibia, and showing no indication of the white mark found in our other species. Rostrum short, scarcely surpassing the base of the fourth ventral segment. Venter covered with a white mealy pubescence which omits the rather broad median sulcus. Length 12 mm.

Described from two female examples taken at La Jolla, California, in August, by Prof. E. B. Wilson.

This is a very distinct and striking species. With *snowi* it forms a group for which I would suggest the subgeneric name of *Xerocoris*, which with the study of more extensive material may be raised to generic value. It may be characterized by a broader form, wider connexivum, more strongly depressed posterior margin of the pronotum, a proportionately shorter head, shorter and stouter antennæ, a shorter rostrum and a different vestiture. In both these species the disk of the pronotum is flatter with a distinct median carina which is scarcely indicated

in *Narnia* proper, and the lateral margins are much more distinctly carinated, the surface of the body, also, is not covered with a close grayish mottled pubescence, as in *femorata* and *pallidicornis*, but the head, pronotum, antennæ and legs are well covered with stiff blackish hairs that become concolorous on the pale disk of the pronotum in *snowi*.

The shorter basal and fourth joints of the antennæ and the less dilated hind tibiæ seem to be the best characters for separating *Narnia* from *Leptoglossus*. The length of the rostrum is variable, and while distinctly longer in *Narnia* proper, in *Xerocoris* it is scarcely longer than in *Leptoglossus*. In *Narnia* proper the vestiture is quite distinct.

***Alydus setosus* n. sp.**

Allied to *eurinus* in form but pale greyish, marked with fuscous somewhat as in *Stachyocnemis apicalis*. Whole body except the elytra clothed with scattering black setæ and in places with a matted greyish pubescence. Postocular portion of the head longer and more narrowed posteriorly and the vertex more convex than in *eurinus*. Apical joint of the antennæ strongly thickened hardly as long as the two preceding united. Pronotum a little narrower anteriorly than in *eurinus*, the latero-posterior margins broadly depressed and a little reflexed. Rostrum attaining the intermediate coxæ. Posterior femora longer and stouter than in *eurinus* with from three to five long teeth and several smaller ones near the apex. Posterior coxæ placed farther apart than in *eurinus*. Claspers of the male approximate, thick, spindle-shaped, their divergent apices somewhat flattened and obtusely pointed.

Color testaceous grey. Head paler beneath; the gula, a broad vitta on each side beneath the antennæ, and a still broader dorsal vitta blackish, the latter narrowed and intensified on the base of the head and bisected by a median longitudinal pale line. Antennæ pale brownish, apical joint a little darker, the outside of the basal joint with a dark line; all but the apical joint black-setose. Pronotum with a broad blackish median ray which becomes evanescent posteriorly and is bisected by a conspicuous whitish median line; pale areas with scattering fuscous punctures. In some examples there is a faint blackish submarginal ray anteriorly. Scutellum a little dusky on the sides and base and with a pale median line continuing the white calloused and slender apex. Elytra punctured with pale brown, especially toward their inner margin and apex, their extreme tip and the inner field blackish; nervures pale; apical margin narrowly white and calloused. Membrane brownish pellucid with the nervures but little branched. Beneath paler, sternum and a double lateral vitta on the pleural pieces fuscous, venter dusky on the base and sides, separated by a lateral pale vitta, edge of the connexivum and pos-

terior margin of the ventral segments more or less broadly pale ; stigmata, disk of the genital pieces of the female, and the latero-apical margin of the pygofer of the male black. Claspers of the male whitish. Legs dotted and more or less clouded on the femora with fuscous, clothed with stiff black hairs ; femoral spines black.

Described from four examples taken by Prof. F. H. Snow on the Baboquivari Mountains, Arizona, one male taken in Galatin Co., Montana, at an elevation of 7500 feet, by M. R. Benton and kindly sent to me by Prof. R. A. Cooley, and one female taken in Big Canon, Davis Co., Utah, in August by Mr. G. W. Browning. The two latter specimens are darker in their general color with the elytra quite uniformly punctured with fuscous and the pale rays on the base of the vertex and anterior margin of the pronotum tinged with pink. All these specimens show a row of black or piceous polished spots on either side of the venter beneath the stigmata. This strongly marked species exhibits a certain transition toward genus *Stachyocnemis*. It has the color markings of the latter genus and the form and proportions of the former, but the form of the apical joint of the antennæ and the spacing of the posterior coxæ approach that found in *Stachyocnemis*. The thick approximate claspers of the male will distinguish this form from any previously-described North American species.

***Jalysus wickhami* n. sp.**

Closely allied to *spinosus* Say, but smaller and more slender with the second joint of the antennæ and the basal joint of the rostrum proportionately shorter. Color fulvo-testaceous, paler on the elytra, base of the legs and pronotal carinæ. Eyes, fourth antennal joint, extreme tip of the corium, apex of the tibiæ, the tarsi except at base and the rostrum toward its apex, black ; venter rufo-testaceous, sternum obscured or brownish. Metapleural and scutellar spines distinctly shorter than in *spinosus* ; posterior lobe of the pronotum strongly punctured, the sides and middle line distinctly carinate, the lateral carinæ continued almost to the humeral angles, not strongly abbreviated as is usually the case in *spinosus* ; apex of the fourth antennal joint white. Length 6-6½ mm.

Described from two males taken by Prof. H. F. Wickham at an altitude of over 7000 feet on the Inyo Mountains, California, in July, and one female taken at Tucson, Arizona, by Prof. F. H. Snow.

This species might readily be mistaken for our common

spinosus. It may most readily be distinguished by its slighter form, shorter second antennal joint, the more distinct lateral carinae of the pronotum and the less conspicuous metapleural spines. In this species there is an obvious elongated callous above the eyes and anterior to the ocelli, which is much less conspicuous in *spinosus*.

***Peritrechus tristis* n. sp.**

Form of *fraternus* but smaller, black, opaque, scarcely covered with minute golden pubescence which is much longer and closer on the venter. Vertex, pronotum and scutellum coarsely punctate. Pronotum a little wider before than in *fraternus*, the sides more nearly parallel; posterior lobe but very feebly depressed and more closely punctured than the anterior, very obscurely touched with castaneous, particularly near the hind edge. Scutellum obscurely bordered with castaneous posteriorly. Elytra testaceous brown or blackish, the nervures pale. There is a smooth whitish spot near the inner angle and about three irregular ones in a longitudinal row exterior to this. Membrane blackish, nervures and a spot at base, more or less distinct, pale. Beneath black touched with testaceous next the coxæ. Throat and pleural pieces opaque, coarsely punctate; hind edge of the metapleura and the venter impunctate, the latter polished and golden pubescent. Legs piceous black, polished, paler on the tibiæ and tarsi; knees and base of the femora testaceous. Antennæ fuscous, hairy; basal joint a little exceeding the apex of the head, second longest, third shorter than the fourth but considerably longer than the first. Rostrum reaching to the intermediate coxæ, piceous, paler on the second joint and tip of the first.

Described from six specimens collected about Victoria and Wellington, Vancouver Island, by Rev. Geo. W. Taylor during March, April and October. This is a smaller and darker species than our eastern *fraternus*, the elytra are darker and more mottled, and the posterior lobe of the pronotum is not pale as in that species. The European *Stygnus arenarius* bears a close resemblance to the present species but is only about one half its size.

***Eremocoris obscurus* n. sp.**

Allied to *ferus* but darker in color with the pronotum a little wider posteriorly and the abdomen proportionately broader behind the middle. Color black, opaque, head finely chagrined, tip of the tylus tinged with castaneous. Antennæ piceous black, the incisures pale, basal joint shortest, second a little longer than either of the others which are subequal. Rostrum testaceous, basal joint piceous reaching almost to the

base of the head, second longest reaching the anterior coxæ, third attaining the intermediate coxæ. Pronotum, anterior lobe a little more convex than in *ferus*, feebly impressed on the middle with a few minute scattering punctures; posterior lobe narrow, coarsely punctured, but feebly differentiated from the anterior lobe. Scutellum coarsely punctured, depressed anteriorly and posteriorly with a feeble longitudinal carina. Elytra blackish fuscous inclined to castaneous on the clavus and disk of the corium posteriorly; basal third of the corium testaceous; this pale color shows a tendency to invade the outer margin of the clavus and extends more or less obviously along the costa. Membrane black, when fully developed attaining the tip of the abdomen, and marked with a small pale spot at the basal and each lateral angle, the nervures distinct but scarcely paler as in *ferus*. Beneath black marked with castaneous against the coxæ. Legs piceous black, polished, becoming paler on the tibiæ, tarsi and base of the femora; the anterior femora have two large and several minute teeth beneath; intermediate and posterior femora a little more thickened than in *ferus*. In the male the colors are somewhat paler than in the female. Length 6-6½ mm.

Described from one male and two female examples taken at Wellington, Vancouver Island, during March and April by Rev. Geo. W. Taylor, an enthusiastic and successful collector from whom I have received some interesting Hemiptera. In this species the pronotum is wider on the anterior lobe than in *ferus*, the abdomen is proportionately broader behind the middle, the intermediate and posterior femora are thicker, and in the specimens before me the body wants the ciliæ of soft hairs that are present in that species.

Xestocoris n. gen.

Ovate oblong, widest across the apex of the clavus; polished. Head about two-thirds the length of the pronotum, subcylindric, horizontal, triangularly narrowed before; clypeus prominent; bucculæ but little elevated, forming a distinct lobe either side of the base of the rostrum. Ocelli placed much nearer to the eyes than to the middle line of the vertex. Rostrum passing the intermediate coxæ, first joint reaching the base of the head, second distinctly longer than the third, fourth shortest. Antennæ stout, first joint surpassing the apex of the head by about one-half its length, second and fourth subequal, third shortest. Pronotum broad, length to humeral width as about 5:8, sides feebly carinate, distinctly rounded to the head anteriorly, transverse impression feeble, placed close to the posterior margin, the humeri prominent and angular. Scutellum depressed, to the level of the clavus. Clavus triseriate punctate. Third ventral suture strongly curved forward. Stigmata of the apical segments minute, placed at about their middle. Sides of the fourth

ventral segment with three small opaque spots two of which are approximate and placed anteriorly. Anterior femora incrassated, armed with about four minute teeth one of which is longer and stouter.

In Stal's synopsis of the extra-European genera of the *Letharia*, to which subfamily this genus pertains, it would run nearest to section "14 (11)" but it is quite distinct from the African genus *Androgæus* there defined. I can find no European genus in which it can be placed.

Xestocoris nitens n. sp.

Piceous black, highly polished; above long setose; basal two joints of the antennæ, rostrum, clypeus, anterior and posterior margins and very slender lateral carinæ of the pronotum, clavus, corium, legs, and apex of the abdomen, testaceous or rufo-testaceous; coxæ and narrow margins of the pleural pieces more or less rufous. Humeri prominent, rectangular, pale. Head and anterior lobe of the pronotum impunctate, the narrow hind margin of the pronotum, the scutellum, and the elytra with coarse scattering punctures which form a single line on either margin of the scutellum, three on the clavus, and about three imperfect rows on the disk of the corium and one on the inner edge of the broad costal area. Membrane short, the nervures nearly obsolete. Venter piceous or black. Eyes rufous. In the specimens before me there are a few coarse punctures close to the anterior margin of the pronotum and a little group near the centre of its disk, and in some the disk of the corium is embrowned. By oblique light and under a lense the dark surfaces exhibit very beautiful metallic blue reflections. Length $3\text{--}3\frac{1}{2}$ mm.

Described from nine examples representing both sexes. Eight of these were taken by me at Colden, near Buffalo, New York, in August; the other specimen was taken by Mr. Philip Fischer at Buffalo in March.

Reduvius (Opsicætus) senilis n. sp.

Much smaller and paler in color than *personatus*. Pale testaceous brown inclining to piceous on the head, pronotum and scutellum; hemelytra clouded with brown with an indefinite spot behind the scutellum, the base of the costa and the apex of the corium whitish; whole surface covered with rather long hairs. Head more tumid behind the eyes, a little narrower and more deflexed before the eyes than in *personatus*; eyes and vertex about the ocelli black; anterior lobe of the pronotum strongly convex and polished, with a deep median sulcus; posterior lobe rather strongly rastrate-punctate, the collar of the anterior lobe shorter than in *personatus*. Scutellum shorter with the apical spine less developed than in the allied species. Beneath paler with the sides and apex of the venter in some individuals suffused with blackish; the metapleura and venter

sharply keeled through their whole length, the extreme edge of this keel piceous. Length 10 mm.

Described from three specimens taken by Prof. F. H. Snow in the Baboquivari Mountains, Arizona.

Reduvius personatus, the so-called "kissing-bug," is the only species of this large genus heretofore recorded from America. Most of the known species have their home in the palæarctic region but a few are found in the tropical portions of Asia and Africa. The species here described is but one of the interesting Hemiptera discovered by Prof. Snow in his entomological explorations in the far southwest.

A New *Cuterebra* from Nebraska.

By PAUL R. JONES, Lincoln, Neb.

While on a collecting expedition near Glen, Sioux County, Nebraska, during the summer of 1906, two specimens of *Cuterebra* were captured by Mr. Harry S. Smith. In determining them one was found to be *C. tenebrosa* Coquillett, and the other appeared to be new, the description of which is submitted below.

Cuterebra cyanella n. sp. ♀. Head black, front at narrowest point seven times as wide as the distance between the two posterior ocelli. Front on each side provided with two small, yellowish-gray triangular spots, one on the inner margin of the eye, and the other between it and the base of the antennæ. In addition to these there is another pollinose spot of similar size on the eye-margin of the face just below the lateral one of the front. Face black, sub-shining, destitute of pollen except for the spot mentioned, and a faint crescent-shaped mark on the lateral edges of the antennary pit. Antennary pit black, shining, pollinose behind the antenna. Antennæ black, third joint pollinose. Arista longer than the antennæ, loosely plumose, black at the base, yellow at apex. Thorax black, with a slight bluish cast, sub-shining, covered with fine black hairs, pleura with longer hair of similar color, and destitute of any oblique tuft of yellow pile in front of the base of the wings. Scutellum of same color, but the hair longer than that of the thorax. Abdomen shining steel-blue, anterior lateral margin of third, fourth and fifth segments pollinose be-

coming greater in width until the whole venter is pollinose. Band of the third overlaps the posterior margin of the second segment underneath. Legs black, on the outer part of the basal half of the hind femora, and of all the tibiæ gray pollinose. Hair everywhere black. Halteres and calypteres dark brown, wings light brown, veins at base tinged with yellow. Length of the body 17.5 mm. Length of wings 14.5 mm. Width of head 7 mm. Width of front at vertex $2\frac{2}{3}$ mm.

This species belongs to the *fontinella* group, and is closely allied to *C. similis* Johnson, *C. atrox* Clark, and *C. tenebrosa* Coquillett. It differs from *C. similis* Johnson, and *C. atrox* Clark in not having the oblique tuft of yellow pile in front of the wings, and the face is without the two large pollinose spots at the lower margin of the eye. It can be separated from *C. tenebrosa* Coquillett by the pollinosity of the abdomen, and the fissure on each side of the antennary pit being narrower and more shallow than in *C. tenebrosa*.

Mr. Swenk's table of the genus *Cuterebra*, which appeared in The Journal of the New York Entomological Society, pages 181-185, December, 1905, may be amended to read as follows:

- | | |
|---|--|
| 5. Pleura mostly yellow or white | 6. |
| 5. Pleura wholly black or at most with a small tuft of yellow pile in front of the base of wing | 15. |
| * * * * * | |
| 15. Pleura with a tuft of yellow pile in front of the base of wings; lower margin of the eye with two large pollinose spots | 16. |
| 15. Pleura without such tuft of pile, lower margin of eye without the large pollinose spots | 17. |
| 16. Last abdominal segment more or less pollinose (Mexico). | |
| | (<i>terrisona</i> Walker) <i>atrox</i> Clark. |
| 16. Last abdominal segment entirely steel blue, not pollinose (N. M.). | |
| | <i>similis</i> Johnson |
| 17. Abdomen destitute of pollen (Cal., Ore., Col., Wyo., S. D., Nebr.). | |
| | <i>tenebrosa</i> Coq. |
| 17. Abdominal segments $\frac{2}{3}$ pollinose ventrally and laterally (Northwest Nebr.) | <i>cyaneella</i> Jones. |

A CORRECTION.—Dr. Dyar has kindly called my attention to the fact that the insect I described in the October NEWS as *Monoleuca spadiceis* is the same as his *Euclea dolliana* (Proc. U. S. Nat. Mus., xxix, 369, 1906).—JOHN A. GROSSBECK.

A new *Platycerus*, and a new *Pleocoma*.

BY H. C. FALL, Pasadena, Cal.

The following fine species of *Platycerus* and *Pleocoma* are somewhat recent discoveries of Mr. Ralph Hopping, of Kaweah, California. They are quite distinct from all previously-described forms as will be seen from the following descriptions and comparisons:

Platycerus opacus n. sp.

Male.—Moderately convex, black, entire surface finely alutaceous and dull, the head and prothorax a little less so than the elytra. Scape of antennæ very nearly twice as long as the funicle, the latter $\frac{2}{3}$ as long as the club; first funicular joint as long as the next two, sixth slightly acutely produced inward; first two joints of club subequal and about twice as wide as long, last joint nearly as long as wide. Mandibles small. Head coarsely densely punctured and sparsely hairy. Prothorax $\frac{1}{2}$ wider than long, widest at or just before the basal third, where it is strongly rounded but not angulate; sides feebly arcuate and strongly convergent anteriorly, still more rapidly converging to the deep sinuation before the basal angles, which are sharply defined, a little acute and everted; surface densely but not coarsely punctate laterally, less densely but still closely and a little irregularly toward the middle, a narrow median incomplete impunctate line; lateral margin flattened at the point of greatest width, narrowing before and behind. Elytra very little wider than, and not quite twice as long as the prothorax, $1\frac{2}{3}$ times as long as wide, subparallel, striæ represented by unimpressed series of very fine punctures, which are scarcely distinguishable from those of the intervals and are in great part confused with them. Legs rather slender, the hind tarsi about $\frac{4}{5}$ as long as the tibiæ.

Female.—Large and more convex than the male, the elytra a little more arcuate at sides; antennal funicle very slightly shorter than the club, the first two joints of the latter more strongly transverse; hind tarsi $\frac{1}{2}$ the length of the tibiæ.

Length ♂, 8.5-10 mm.; ♀, 10.5-12.5 mm. Width ♂, 3.5-4.1 mm.; ♀, 4.8-5.5 mm.

Described from a series of 4 ♂'s and 3 ♀'s taken by Mr. Hopping at Clear Creek (June 5-12) and South Fork of Kaweah River (Jan. 28-30), California. "Both these localities"—writes Mr. Hopping—"are in the Sequoia National Park, and the beetles occur in the Black Oak or Upper Chaparral belt, at an elevation of 4000 to 5000 feet, and so far have only been found by digging, or where earth was being removed from the upper roadbank."

Opacus is to be associated with *thoracicus* Csy. and *latus* Fall, by its form and tarsal structure, but is very different from either in its subopaque surface and fine sculpture.

Pleocoma hoppingi n. sp.

Male.—Oblong oval, sides of elytra nearly parallel, color above and beneath bright reddish brown, shining, head prothorax and underbody densely clothed with long fulvous hair. Antennæ very nearly as in *hirticollis*, clypeal horn deeply triangularly notched, lateral ante-ocular processes subquadrate, their outer edge parallel with the axis of the body (triangular in *hirticollis*, the external edge strongly oblique); vertical horn emarginate at tip. Prothorax not quite twice as wide as long, hind angles obtuse but fairly distinct, sides before them very slightly convergent and just perceptibly sinuate, then rounded and strongly convergent to apex; basal margin evenly arcuate from side to side; disk evenly convex, only slightly flattened anteriorly, surface rather densely coarsely punctate at the middle in front, less densely and somewhat more finely at sides and posteriorly, a small subimpunctate area each side of the middle of the disk. Elytra barely $\frac{4}{5}$ as wide as long, sutural stria deep, geminate striæ feeble, punctuation fine and sparse, sides almost smooth. The female differs as usual in its larger size and stouter form which is wider behind; the prothorax is glabrous and nearly uniformly punctate throughout; the elytra are more closely and strongly punctate than in the male, being virtually as closely and strongly so as the prothorax; the clypeal notch is small, the sides obtusely rounded; the ante-ocular processes formed as in the male.

Length ♂, 23-26 mm.; ♀, 30 mm. Width ♂, 13-14 mm.; ♀ 20 mm.

Described from a series taken by Mr. Ralph Hopping on the South Fork of the Kaweah River, Cal., and bearing dates Jan. 25 and Feb. 4.

Because of its octo-lamellate antennæ, and closely punctate and hairy prothorax, this species is comparable only with *hirticollis*. The latter, as we understand, is a distinctly smaller and stouter species, the male always black or nearly so when mature, the hair of a paler yellow, prothorax declivous and plainly flattened in front, the posterior margin bisinuate, the elytra more strongly punctured. There are some discrepancies between the original description of Schaufuss and the later ones of LeConte and Horn, and there is therefore a possibility that our interpretation of *hirticollis* is erroneous. In Schaufuss's description the prothorax is said to be almost three times as wide as long, while Horn says "more than twice as

wide as long." As a matter of fact the width is barely twice the length in both *hirticollis* and *hoppingi*, and it is probable that both authors have given the relative dimensions from a vertical view point, in which case there would be considerable fore-shortening. I take pleasure in dedicating this fine species to friend Hopping, whose explorations in the Californian Sierras have brought to light not a few new and interesting species.

Notes on Moths.

BY CAROLINE GRAY SOULE.

At one time there was some discussion of the cause of difference in the forms of cocoons of *Attacus cecropia*, and some very positive statement that the baggy cocoon was always found low on the shrub or tree and in damp lowland places.

Last September I found three huge *cecropia* larvæ feeding on red-berried elder by the roadside, in a dry, sunny place. They were so large that I took them, put them in a large box with twigs fastened vertically and horizontally, and the larvæ spun the next day.

One made a normal, slender cocoon on a horizontal twig: another made a very baggy cocoon on a vertical twig; the third made a rather baggy one, of a green color except on one side where the normal brown predominated. This cocoon was on a horizontal twig, and against the side of the box.

On June 9th were laid eggs of *Hemileuca budleyi* from moths descended from two pairs of moths received in 1903.

Their egg-period was 36 days; 1st stage, 7 days; 2d stage, 5 days; 3rd stage, 8 days; 4th stage, 7 days; 5th stage, 10 days; 6th stage, 10 days; 7th stage, 16 days, making 63 days from egg to cocoon, and a sixth moult, which had not occurred in any former brood. Although "bred in" for three generations they were very large, fine specimens, but very slow in all their stages. One correspondent, to whom I had sent eggs, wrote that his brood left the wild cherry tree on which he had placed them, and marched eight or ten feet to a small apple tree where he found them feeding and thriving.

Two ♀ *Samia cynthia* moths mated with ♂ *A. promethea*, and both sets of eggs hatched. The larvæ thrive on wild cherry, preferring it to any of the leaves which *cynthia* prefers to cherry—in my experience—yet there was no trace of *promethea* in their appearance. Their cocoons are more like those of *promethea*, being smaller, browner, and more slender in shape than the usual *cynthia* cocoon.

When a cocoon was nearly finished the larva would crawl to the upper end, seize a bunch of the loose threads, at the open end, in its mandibles, and, letting go all hold with legs and props, "pounce down" violently, pulling the bunch of threads in and down. Then the larva let go the threads, which remained drawn toward the back, or "stem"-side, of the cocoon, crawled up to the top and repeated the process until all the loose threads had been gathered close to the back of the cocoon, and its mouth was closed. I have never seen any *cynthia* larva do this, but I have seen *promethea* do it.

Three of the larvæ spun cocoons so small that they could not turn in them, so backed out, deserted them, and tried again. Their silk gave out and they pupated without any cocoon, but not perfectly.

In my experience *cynthia* larvæ will not eat wild cherry if they can get anything else, and I have had whole broods starve rather than eat it. These hybrids preferred it to everything else, except some of Miss Eliot's lot, which took sassafras. *Ailanthus* I did not have to offer them.

One ♀ *cynthia* mated ♂ *promethea* but laid no eggs until mated with ♂ *cynthia* after which she oviposited abundantly. The larvæ were typical *cynthia* in appearance, but chose wild cherry for food and spun small, slender cocoons like *promethea*.

Accidentally three boxes containing these larvæ, just ready to spin, were put aside reversed, so that the twigs and leaves arranged for normal spinning were upside down. Each of the six larvæ spun a normal cocoon, fastening the leaf-stem to the twig as if the twig were uppermost, and wrapping the leaf around the cocoon as usual. Yet the spinning had not begun when the boxes were set aside.

Early in August I found hundreds of *Dryocampa rubicunda*

larvæ crawling, for pupation, on a wooded road. Of the fifty-one which I took and which pupated, thirteen gave the moths on August 22d-25th. These moths mated and their eggs hatched in due time. The other pupæ are alive and in good condition, but seem to be waiting for another summer before giving the moths, a new experience to me.

NAMES OF COLEOPTERA.—In the NEWS of last September I cited *Aphanotus* Lec. as a homonym of *Aphanotus* Lowe, but did not propose a substitute. I am indebted to Dr. D. S. Jordan for the information that Lowe's genus was really *Aphanopus*, and "*Aphanotus*," as given in the Nomenclator Zoologicus, is a mistake.—T. D. A. COCKERELL.

REMEDY FOR MOSQUITOES.—A Memphis (Mo.) man has discovered a new way to get rid of mosquitoes. He says to rub alum on your face and hands. When the mosquito takes a bite it puckers his buzzer so it can't sting. It sits down in a damp place, tries to dig the pucker loose, catches its death of cold, and dies of pneumonia.—*Newspaper*.

TWENTY-ONE MILLION BUTTERFLIES CAUGHT.—Belgrade, Sept. 8.—Owing to the damage done to crops by butterflies, the Servian Minister of the Interior offered four cents for every 500 captured. Although the amount appears small, the pursuit of butterflies is profitable, as already 21,000,000 of them have been tendered for reward. The minister says it is cheap to get rid of these millions at a cost of \$4,250.—*Newspaper*.

CERCERIS DESERTA Say.—New Haven, ♀, June 27, 1902 (E. J. S. Moore); ♂, August 16, 1904 (O. H. Walden). Only the ♂ has heretofore been known to science. The ♀ here cited differs from the ♂ of the same place as follows: clypeus produced, the production a little wider than long, nearly quadrate, planate, projecting downward and outward and forming with the face an angle of about 45°, the anterior margin of the projection slightly broadly produced in the middle, clypeal projection with a broad transverse yellow band leaving an anterior and posterior band of black about half as broad as the yellow lateral face marks, nearly an obtuse angled triangle adjoining the eyes, with a rather broad black space between them and the yellow clypeal mark and a narrower black space between them and the insertion of the antennæ; greater part of first dorsal abdominal segment covered with almost semicircular yellow marks that almost attain the posterior margin of the segment along their diameter and that are separated from each other along the middle line by a dark line narrower than the width of the pedicellum; dorsal abdominal bands broader, venter entirely black; coxæ and trochanters almost entirely black, anterior and middle femora black, tipped with yellowish brown, posterior femora pale and dark brown, posterior tibiæ yellow, with the apical third of the posterior aspect brown.—H. L. VIERECK.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., DECEMBER, 1906.

To avoid the annoyance and trouble of collecting subscriptions and keeping accounts in the future, all subscriptions to this journal will be exacted in advance and the publication will be stopped at the expiration of subscriptions. This rule will apply to everyone and no exceptions will be made. Subscription blanks will be placed in this issue for the benefit of those who have not paid for the coming year. These blanks will also be found in the copies of those who have already renewed for 1907, and are not to be considered bills.

Another change will be made in the coming volume: a number for July* will be published, but none for August or September. There is not the same necessity for the journal during the hot collecting months. We will continue to improve the NEWS in every way and expect to make it the best journal of its kind in the world. We are constantly receiving commendatory letters for our efforts in this direction. Our subscribers and well wishers can aid us greatly by helping to increase the subscription list, as this will aid us to improve the journal for all interested.

RHABDOPHAGA RIGIDAE.—I am much pleased to see the excellent descriptions and figures of Cecidomyiidae in Dr. Felt's report for 1905, just issued. I notice on p. 122 that *Rhabdophaga rigidae* appears as a "new species," on the ground that Osten Sacken knew only the gall. It may be as well to state, therefore, that in *Entomologist*, 1890, pp. 278-279, the gall, larva, pupa-shell and imago are briefly characterized.—**T. D. A. COCKERELL.**

*Since the beginning of the Journal no numbers for July and August have been published.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

DR. P. P. CALVERT secured a valuable lot of insects on his recent trip to Mexico. These are in addition to the Odonata to which he gave especial attention.

WE have recently had a pleasant visit from Mr. T. N. Willing of Regina, Saskatchewan, Canada. He is doing good work in creating an interest in entomology in his district, and is an enthusiastic collector, particularly in Lepidoptera and Coleoptera.

HIGHER CRITICISM.—Ascum—"So you don't believe the story of the fall of man?" Doubter—"Not altogether. I don't believe there was any serpent, although Eve may have honestly thought so. It was probably just an apple worm which her fear magnified."

"CHIGGERS." LEPTUS IRRITANS AT CINCINNATI, OHIO.—Ten years ago these pests were unknown to me in this locality. Now they have become numerous and exceedingly aggressive. While at work in a thicket, June 30th, digging up an ant hill and sifting it, I secured a fine collection of them, without any effort on my part. I find a preparation called "Libradol," made by Lloyd Bros., Cincinnati, Ohio, a very effective and instant relief from the irritation, while a little carbolated vaseline quickly heals the pustule which they cause.

"Here's to the 'chigger,' who grows no bigger

Than the point of a pin.

The lump that he raises, itches like blazes,
And there's where the *rub* comes in!"

—CHARLES DURY.

PRELIMINARY ANNOUNCEMENT OF ANNUAL MEETING OF ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.—The Nineteenth Annual Meeting of the Association of Economic Entomologists will be held in New York City on Friday and Saturday, December 28 and 29, 1906. More details concerning the exact place of meeting, hotel accommodations and railway rates will be given at a later date.

It is desired to make this meeting the best in the history of the Association, both as to attendance and number and quality of the papers presented.

Reports of the Committees on Nomenclature, Testing of Proprietary Insecticides and on the National Control of Introduced Pests will be presented for the consideration of the Association. If possible, a symposium will be arranged on Insect Legislation.

Kindly forward at once the titles of papers you may wish to present. It is suggested that a brief abstract of each paper be sent to the Secretary, as this can be used by the press and will make the reports of the meeting more valuable.—A. H. KIRKLAND, President, No. 6 Beacon St., Boston, Mass.; A. F. BURGESS, Secretary, Capitol Bld., Columbus, O.

UNDER the name *Eurypodea fredericki* Edw. A. Klages has described a remarkable beetle from Suapure, Caura Valley, Venezuela, belonging to the group Copres. The single sheet description was published by the author.

Entomological Literature.

TENTH ANNUAL REPORT OF THE STATE ENTOMOLOGIST OF MINNESOTA.—Fourth Annual Report of F. L. Washburn. The Diptera of Minnesota. This is a work of one hundred and fifty-five pages and contains two plates in color; the second plate is appropriately numbered as to the names of the species and the first is not. There are also one hundred and sixty-three line and half tone cuts, which are mostly very good. The first fourteen pages are devoted to an account of the Diptera, their economic importance and their anatomy. Then follows a synopsis, after which the body of the work is made up of an account of the families and species inhabiting Minnesota. The work will be very valuable to the people of the State who care to use it. As a popular treatise on the subject it will also be useful to the many entomologists who do not make a special study of the Order.

A REVISION OF THE AMERICAN PAPILIOS.*—By the Hon. Walter Rothschild, Ph.D., and Karl Jordan, Ph.D.

This is a work of 333 pages, with six plates and fifty-nine figures, and covers North and South America and the adjacent islands. It shows very great research into the literature of the subject and we presume the nomenclatural opinions of the authors will be largely followed. There has been no attempt to divide the species into "up-to-date" genera, although this is promised later. We believe the authors are unusually qualified to do this in a scientific way as they say "classification has always suffered from the habit of systematists of studying the systematics of a district rather than concentrating their labors on certain families taking into account all the species of the globe." We again quote as follows: "The most interesting general result of our researches is perhaps the demonstration of geographical variability in secondary sexual characters apart from the genitalia. The occurrence of such variability is of great bearing on systematics, since many authors consider secondary sexual differences to be of generic value." It should not be forgotten that there are two sexes in insects and the student is not unlikely to have or obtain but one and a unisexual classification won't help him materially, especially in families where there is considerable antigeny. There is much food for thought of very considerable interest in the preface. The work as a whole is excellent, and while it is quite possible to take exception to the standing accorded a number of forms, the subject is one of great difficulty and our knowledge at present too limited to speak dogmatically on the subject. Trinomials are used

* *Novitates Zoologicae*, xiii., No. 3, August, 1906.

and varieties are divided into three categories; the geographical, the seasonal and the individual variety. Subspecies is used in the sense of essential variety, incipient species or geographical race. It is just here that the personal equation comes in and we are of the opinion that this work expresses fairly well the relative value of these forms, or as well as may be at the present time, with the knowledge at hand. It will probably be of interest to our readers to speak of the treatment of the species found from Mexico northward. The name *ajax* is dropped and our species becomes *marcellus marcellus* Cram.; *marcellus floridensis* Holland; *marcellus telamonides* Feld.; *marcellus lecontei* Rothschild and Jordan; *philenor philenor* L. and *philenor orsua* Godman and Salvin. *Machaon aliaska* Scudder, does not differ in any essential way from the Asiatic specimens. We have examples from Eagle City, Alaska, and Sikkim that are identical. *P. polyxenes* becomes *polyxenes stabilis* Rothschild and Jordan; *polyxenes asterius* Cram.; *polyxenes polyxenes* Fab., and *polyxenes brevicauda* Saund.; *pergamus* is given subspecific rank. *Cresphontes* is considered distinct from *thoas*, and the latter becomes *thoas antocles* Rothschild and Jordan. *Troilus* is divided into *troilus troilus* L., and *troilus texanus* Ehrm. *Glaucus* becomes *glaucus glaucus* L. and *glaucus canadensis* Rothschild and Jordan. We may mention a few cases where there is much warrant for a difference of opinion in regard to the standing of varieties. *P. glaucus* might be more logically divided into three forms, the very large and dark Florida form being of equal value to the boreal. The Cuban *polyxenes* shows almost no difference of moment from specimens found in the United States, the latter varying to a wonderful degree. Variety *curvifascia* is said by the authors to occur from New Mexico, to Vera Cruz, Guatemala, and West Mexico, a topomorph covering a great extent of territory, yet it is not given subspecific value. It seems to differ to a greater degree from *asterius* than does the Cuban *polyxenes*. *Papilio bairdi* is given specific rank which is very doubtfully the case. It seems much more nearly related to *polyxenes* than is *americus* Kollar. Variation has not been sufficiently studied to permit of an exact nomenclature, and the values of varieties are by no means parallel, and at present it is psychological so far as the individual observer is concerned. The authors had a wealth of material for study, and the work shows the general result of this in its broad treatment. The *thoas* group represents a special study and a rather large number of names are proposed. We are inclined to think many more names could be applied to some of the other species on the same principles. Perhaps this would invalidate the argument on page 429 in favor of trinomials in preference to citing localities, as the locality would be more indicative of what is meant than a name, which often indicates an inappreciable difference, difficult or almost impossible to express in words. Such works undoubtedly cause an increased interest in the group or groups treated and mooted points are more likely to be elucidated thereby.—H. S.

'GLI INSETTI, LORO ORGANIZZAZIONE, SVILUPPO, ABITUDINI E RAPPORTI COLL'UOMO.—By Prof. Antonio Berlese, Director of the Royal Station for Agricultural Entomology in Florence. Milan, Societa Editrice Libraria, 1906. Published in parts at one lira each.

With such excellent recent general American books on insects as those of Kellogg and of Folsom, it would seem difficult for a book in a foreign language to meet any great demand in this country, yet the admirable work of Professor Berlese, of which seventeen parts have already been published, will undoubtedly prove a very important addition to the libraries of all institutions in which advanced morphology is being studied and in all laboratories in which the study of insects is undertaken from any point of view.

Berlese is a master, a man of broad ideas, thorough training, admirable in technic, clear in demonstration, an excellent writer, and a capable draftsman. His work when completed will be both sound and comprehensive. It will comprise two volumes, of which the first will in a general way contain the anatomy, and the second the biology of insects. The first volume will consist of from seven to eight hundred pages, and will be accompanied by about one thousand figures. Of these, 550 pages have been published in seventeen parts, and the printed parts contain six hundred figures and four plates.

The subjects considered in the first volume, by chapters, are: I. Brief history of entomology; II. Size of insects; III. Plan of the insect structure; IV. Embryology in general; V. Morphology in general; VI. Exoskeleton; VII. Endoskeleton; VIII. Muscular system; IX. Integument and its structure; X. Glands.

There still remain to be published chapters on the nervous system and organs of sense, organs of digestion, organs of circulation, organs of respiration, organs of secretion, and sexual organs. In the part already completed, the chapters on morphology are marvels of detail and thoroughness. The work itself is a large octavo, and more than ninety pages are devoted, for example, to the study of exoskeleton of the head, while nearly eighty pages are occupied with the treatment of the muscular system. Nearly all of the numerous and strikingly apt illustrations are original, having been drawn by Dr. Berlese himself. Each section of the work is followed by a very complete bibliography, and the author has shown a perfect knowledge of the work of other men, the publications of American authors having been considered and studied with a thoroughness quite unusual among European authors.

The second volume, which has been reserved for the treatment of biology of insects, will contain a careful consideration of all questions of economic importance, and it will undoubtedly be of interest to learn from this work Berlese's final views on the subject of parasitism, and especially the relations of insects and birds, upon which point he has long been at odds with other Italian zoologists.—L. O. HOWARD.

Doings of Societies.

At the meeting of the Feldman Collecting Social held September 19, 1906, eight members were present and Mr. Harry Kaerber visitor. President Daecke in the chair.

Mr. Wenzel stated that he had received a postal card from Professor Smith from Brussels wishing to be remembered to the boys.

Mr. Harbeck spoke of *Tenodera sinensis* having been raised at Logan. Mr. Schmitz remarked that he also raised the said species at West Philadelphia, and that he saw imagos in his yard up to about September 1st.

The insects exhibited by Mr. Schmitz at the last meeting were identified as *Aleurodes vaporariorum* Westwood. They were found on scarlet sage, of which they had entirely denuded the foliage.

Mr. Wenzel exhibited work in white pine of *Tomicus pini* and *Pityophthorus sparsus*, collected by H. Wenzel, Jr., at Pocono Mountain.

Mr. Harbeck reported that the collecting season was very promising up to July 15th, since which time it has been poor.

Mr. Daecke exhibited a specimen of *Evetria comstockiana* which he bred from a pine rosin tube. He also exhibited a specimen of a *Pimpla* (*Calliephialtes*) n. sp., bred from a similar rosin tube which is evidently parasitic upon *Evetria comstockiana*.

Mr. Daecke exhibited specimens of *Rhinoessa albula* taken at Stone Harbor, N. J.; one specimen was mounted on white ocean sand, from which it was difficult to distinguish with the naked eye.

FRANK HAIMBACH, *Secretary*.

At the meeting of the Feldman Collecting Social held October 17, 1906, at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, Philadelphia, there were eight members present. President Daecke in the chair.

Mr. Haimbach read an extract from a letter received by him from Miss Annette F. Braun, of Cincinnati, Ohio, referring to her observations of the Life History of *Tenodera sinensis*.

Mr. Laurent reported the capture of *Pamphila phyleus* at Mount Airy, Pa., which he said is the second record of capture of this species for eastern Pennsylvania. He also reported capture of *Catocala concumbens* in Pike County, Pa., which is second record for the State of Pennsylvania.

Mr. Laurent also stated that in the northeastern part of this State, locust trees as well as golden rod grow profusely, but he had not seen any specimens of the locust borer *Cyllene robiniae* in the past season, while in the southeastern part of the State the trees were much infested and the insect common.

Mr. Wenzel read from Dr. Hopkin's paper on the life history of *Cyllene robiniae*.

Mr. Harbeck reported the following Diptera new to New Jersey: *Frontina aletiae* Riley taken at Anglesea, June 11, 1905; *Acemyia dentata* Coq. taken at Lucaston, September 9, 1905, and *Brachycoma sheldoni* Coq. taken at Trenton, May 23, 1906.

Mr. Harbeck also reported capture of *Frontina setipes* Coq. at Germantown, Pa., September 24, 1905, described from Brookings, South Dakota.

Dr. Castle exhibited specimens of *Pachyscelus purpureus* Say, taken at Glenolden, Pa., and stated that his earliest record is April 29th and latest spring record June 12th, and that he found the insect common again on September 21st, which proves conclusively that there is a second brood.

Mr. Haimbach exhibited his collection of the Genus *Crambus* taken in Philadelphia, Pa., and southern New Jersey, numbering 22 species, one of which, *satrapellus*, being new to New Jersey list and one probably new to science.

Mr. Daecke exhibited a ♂ *Mydas fulvifrons* Ill. and a ♀ *Mydas chrysostoma* O.-S., which were taken in coitu at Stone Harbor, N. J., thus establishing the synonymy of *chrysostoma*. He also stated that the new record for New Jersey of *Chrysops sordidus* O.-S. (meeting of June 27, 1906, published ENT. NEWS, Oct., 1906) is erroneous, it should read *Chrysops cuchux* Whitney. There is no reason, however, why *Chrysops sordidus* O.-S. should not be found in New Jersey.

FRANK HAIMBACH, *Secretary*.

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